

AVIATION WEEK

A McGRAW-HILL PUBLICATION

FEB. 7, 1949



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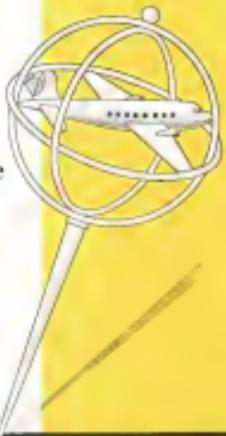
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NEWS SIDELIGHTS

Feedline Problem

Feedline may tilt airplanes back at Douglas' Sept. 100-3s, but their sheet metal feedlines remain likely to prevent them from becoming customers for the present, at least.

The feeders now operate about 50 DC-3s. Under these, frequency certificates are extended, all of the feeders will be out of business by January, 1972—nearly two years before extensive changes would be required on DC-3s to meet the higher performance standards of the transport category.

Money Men

First Vice Secy. Elmer Thomas (D-Okla.) is under heavy pressure from agricultural interests to slash national defense expenditures—so there would be less funds available for farm input subsidies.

Thomas is in favor of the Senate Appropriations subcommittee on the armed services which will consider Air Force, Navy and Army budgets for the coming year.

Other Democrats on the subcommittee with a big voice in deciding whether funds should be allocated for the 70-Camp USAF program are Sen. Carl Hayden (Ariz.), Sen. Richard Russell (Ga.), Sen. Joseph Califano (N.Y.), Sen. Strom Thurmond (S.C.), Sen. Pat McCrory (N.C.), Sen. Russell B. Long (La.), Sen. John McClellan (Ark.), and Sen. A. Willis Robertson (Va.).

The House Appropriations panel on Defense (S. D.) has Sen. George Smathers (S. D.), Sen. George D. Smathers (S. D.), Sen. Clark R. Moseley (Miss.), Sen. Howard Ferguson (Md.), Sen. Ernest G. "Ernie" Gruening (Alaska), Sen. John McClellan (Ark.), and Sen. A. Willis Robertson (Va.).

Commerce Shift

Term's Rep. Robert W. Byrd (D-W. Va.) is slated to become top man on aviation matters on the House Interstate and Foreign Commerce Committee.

Rep. Albert Bilbrey (D., N. C.), first in line for the chairmanship of the Aviation subcommittee, has been hospitalized for sometime and his health probably will not permit him to be active on the Capitol Hill over the coming months. In view of this, House Interstate's chairman, Rep. Robert

End of Probe

By surprise of the Senate Investigations Committee's recently-issued annual report is that it makes no mention of airline sub-subs.

The committee's staff has been investigating the matter since last spring.

The probe was initiated with the help of the group's chairman, Sen. Hiram Fagge (R., Mich.). Fagge's report states at the time that he intended to disclose the extent to which passenger has influenced CAB to award subsidies have resulted in alleged subsidy awards to the U.S. Treasury.

Committee Counsel Francis Flanagan reports that the staff's findings on airline subsidies are being turned over to Sen. Gayle Hiner (D., N.C.), member of the chairman's staff.

Hiner is in favor of the Senate Appropriations subcommittee on the armed services which will consider Air Force, Navy and Army budgets for the coming year.

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Symington's Tip

Air Force Secretary W. Stuart Symington gave Washington reporters a tip last week that National Security Council members are not to be disturbed during their vacation.

Washington observers long feel that the policy of Defense Secretary Robert S. McNamara to split the budget into three equal share regardless of the joint firms reflected by overall defense strategy. Rep. Carl Vinson (D., Ga.) chairman of the House Armed Services Committee asked Symington what the Air Force could do if given the \$300 million new budget for unusual subsidy needs at the U.S. Treasury.

Symington answered: "Well, with one-third of \$300."

"You are talking about one-third. I mean all of it." Vinson interjected. But the press took credit Symington's words.

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Reserve Shakeup

As predicted in *AVIATION WEEK* last Nov. 22, the appointment of Gen. Guy Edward R. (Pete) Quigley as head of the USAF reserve program is producing a shakeup in the Air Reserve program.

Details of the Quigley program will probably not be announced until next summer but basic changes are expected to bring intensive flight training with re-inforcement in total numbers to be retained.

Quigley is also leading a board to study means of merging Air National Guard with USAF Reserves. This board will also determine the size, organization and training requirements of the new merged Air Reserve components.

Airports, Planes Rise

In the midst of reorganization hudder (*AVIATION WEEK*, Jan. 31), Civil Aviation Administration took time out to report some facts.

According to CAB, the U. S. had 6454 airports and 55,997 aircraft at the beginning of 1968.

Airport total was an increase of 655 over the total reported at the beginning of 1968, and the aircraft figure showed an increase of 3176 over planes registered at the beginning of 1968.



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AVIATION WEEK February 7, 1948

NEWS DIGEST

DOMESTIC

Boeing aircraft shipments fell to \$17, which is \$10,571,231 in November, a drop of 37 percent at number and 11 percent in value from October. Convair Bantam exports. In same month, overall engine shipments were 793, and value of engines and parts was \$1,179,465, which is 11 percent in number but decrease of 12 percent in value. November passenger plane backlog was 152, compared to 139 in January.

Post of New York Authority and others serving New York, last week still were holding hearings in an attempt to settle the Idlewild dispute.

Admiral M. Rosenthal, assistant director of aeronautical research, National Advisory Committee for Aeronautics, was elected vice president of the Society of Automotive Engineers representing aircraft propulsive activity.

Robert V. Hertz, who recently resigned as vice president and general manager of Douglas Aircraft Co., joined Transocean, Nasco, Bailey & Scott, divisional public accountants, as resident partner in Los Angeles.

FINANCIAL

Aer Associates, Inc. reports net profit of \$4684 for quarter ended Dec. 31, 1947, an after tax of \$1,457,240, and after provision of \$280 for federal income taxes. On sales of \$1,601,578 in the corresponding period of the preceding year the company net \$29,954.

Tenix Engineering & Mfg. Co. reports final 1947 figures to show sales in excess of \$9,000,000, rather than the \$5 million at previously reported, and a net profit of \$1,000,000, showing the 1947 net of \$776,000 reported as the 1941 income figure in AVIATION WEEK, Jan. 13.

Monrovia Mfg. Co. assigned to Seven days and Exchange Commissioners role of \$99,274 for the three months ended Dec. 31, 1948. Operators continue in a profit, according to President Henry F. Niles.

FOREIGN

Britain has contributed nearly \$15 million to the cost of the Berlin airship, according to Undersecretary for Foreign Affairs Christopher Mayhew.

International Air Traffic maintained about the same level in November as in October. It is indicated by the tonnages just before the IATA Circular Home in London. November tonnages totalled \$13,442,000, roughly the same as in the preceding month.

INDUSTRY OBSERVER

• New version of the Bell X-1 will be capable of breaching Mach 2.04 and a speed of 1540 mph, about 35,000 ft., according to Lucy Bell, president of Bell Aircraft Corp. Present version of the X-1 has set a top speed of 1300 mph, which is Mach 1.5 about 35,000 ft. The four new models of the X-1 now under construction at Bell's Niagara Falls plant will have a 50 percent increase in fuel capacity. Meanwhile Capt. Charles Yeager, first experimental pilot of the X-1, confirmed the fact that the X-1 has flown above 30,000 ft.

• Marine Helicopter Development Section of Sikorsky is scheduled to get a maximum of the Florida H-39 from twin inverted helicopter. The new version, which will probably be designated H-39-2, will feature an all metal monocoque fuselage instead of the steel tube and fabric construction of the H-39-1. The all metal fuselage is expected to eliminate most of the vibration now experienced in the H-39-1.

• **Airplane division** of Convair-Wright Corp. was given a \$3 million contract to reconstruct 100 USAF Convair C-95 twin engine transports. The planes are now at Wright-Wichita, Kan. Another 100 C-95 will be reconstructed by Grand Central Airport Co., Glendale, Calif., under a \$2.5 million contract. Convair-Wright Airplane division is also working on guided missiles.

• **Rational** of interest in use of IATO on free-engine transports to overcome motor limitation is indicated by CAA tests just completed in the South American Andes for Brazil. At La Paz, which has a threshold pressure and elevation of 18,000 ft., tests were made with a DC-4 to determine what proportion of auxiliary power might be required in using IATO at the La Paz Field.

• North American has received military go-ahead to modify part of its twin-engine order for B-45s to provide a new wing with greater fuel capacity to stretch the range of the four jet military bomber. Company has taken over Los Angeles Airport hangar used by Pan American as an intermediate depot and soon will begin static tests on the new wing. PAA will move into the older of other airline ticket offices on north side of airport.

• **Northrop** is awaiting confirmation of its belief that modification of 18 piston engine B-57 Flying Wing bombers in jet power is not affected by the RB-47 jet wing burner order cancellation, although the modification authority was supplemental to the 47 contract. Work on the modification is proceeding pending a final decision. "Several months" will be required for tooling up before the company can begin production of its recently approved order for 48 B-57 two-place jet weather-beater jet fighters. First of two prototype units flew last August, and the second now is nearing completion.

• **North American Aviation** will manufacture its T-28 military trainers at the company's Los Angeles Airport facility instead of at Downey, Calif., as planned originally. Production program calls for construction of 4000 units by July 15 and completion of the first flying airplane by Sept. 2.

• **United Helicopters** production schedule for the "Hiller 360" calls for one each working day beginning in May.

• **Cessna** closed its commercial production year with 106 Cessna-Lisen delivered during 1948. A backlog of 32 transports remains for delivery this year. Company is hopeful of increasing the latter substantially during the second three-quarter of calendar year, which will further expand production. At last inquiry financing firms had not crystallized, and that may be attributed failure of Cessna to put some potentially hot prospects on the dotted line as firm buyers.

• **Crosswind exhaust system** developed by Pratt and Whitney engineers for use on the twin cylinder 115 hp powerplant in the new Superbipes Clipper is said to add approximately 7 hp. at static pitch through more effective scavenging of exhaust gases. Two cross-over tubes connect the exhaust ports of the front cylinders and the ports of the last cylinder. Front and mid exhaust are then piped to the smaller exhaust at the rear of the engine.

AVIATION WEEK, February 7, 1948

HEADLINE NEWS

How Congress Plans to Boost Air Force

Authorization for 70-Group strength first move; UMT fund diversion comes next.

Cooperative strategy for boosting U.S. Air Force funds in the fiscal 1948 budget exploded on Capitol Hill last week.

Top issue is again funding for the 70-Group USAF bill before the House Armed Services Committee headed by Rep. A. Vining (D. Del.).

• **Cooperative Plan.**—It is what Congressmen leaders plan. + Pass the Vinton-Taylor bill authorizing the permanent strength of the regular U.S. Air Force at 70 groups plus 32 special squadrons and reorganizing current components.

+ About \$800 million now contained in the fiscal 1948 budget for Universal Military Training is USAF. This would boost USAF strength from the 45 groups now required by the budget to 51 groups and add \$450 million to the \$1.04 billion now contained in the proposed 1948 budget. This would provide a total of \$2.7 billion for new aircraft

in fiscal 1948 compared with \$1.9 billion in last year's second peace-time airpower appropriation.

• **Less New Aircraft.**—At the level called for in the fiscal 1948 budget—a 30 percent cut from 14,000 planes down to 9,700—there would be a procurement of 1,700 planes and 1,165 planes in fiscal 1948; 1,600 planes and 930 planes for 1949.

• **Barbara Comment.**—This program has the strong backing of the House Armed Services Committee, and its powerful leader, Vining. It has also been firmly approved by House Speaker Sam Rayburn (D. Tex.), with the comment: "Vinton's bill gets what he worth up there." President Truman is not expected to make a vigorous fight against this congressional action because it does not involve the breaking of his defense budget ceiling. The powerful leaders of southern Democrats who are participating in the fight for air power in the Hill this year are the members of the Truman camp to pass the congressional strength.

Symington made it quite clear that as a member of the Truman administration he is supporting the President's budget with its high of the USAF to 48 combat groups because "they know more about the overall picture than we do."

Vining's comment on Symington's testimony was:

"That makes the more clear that we had the money you would support when you consider the minimum requirement—a 70-Group program."

• **Senate Dissent.**—Spectators at the hearing who expected Symington to make a strong defense of the 70-Group program were disappointed, but informed observers believe that Symington's new strategy will get more concrete results for USAF than a public blust of the Truman administration on the air power issue. The attorney left without any answer to the question: "What do you intend to do on strength of the Air Force in the new Truman administration?"

Both aircraft industry spokesman and congressional strategists agreed that the fight for air power can be carried on more effectively by having a man of



MAULER PACKS A WALLOP

close to 1000-mph cruise with full maximum load. Mustang's gross on takeoff with this weight was 23,820 lb. Cost is present in a \$330 lb. Pratt & Whitney Wasp Major engine and has a range of over 2000 miles.

Symington's statement within the administration backed by the vocal support of air power advocates both in Congress and outside the government.

• **Stock High-Robertson observes** also noted Symington's position and agreed with the way Truman administration is high. He recently presided over a luncheon dinner to Vice President Alben Barkley in New York. Among those present at a recent portrait presentation in Symington's office were Presidential aide, Clark Clifford, Secretary of the Treasury John Snyder and Senate Lyndon Johnson (D. Tex.), all powerful in inter-branch administration circles.

Other highlights of Symington's testimony:

• **Provision of four B-36 groups is the first Air Army Command.**

• **Boeing 367-80 planes** place emphasis on the group's ability to build up to four groups and reducing the number back groups (B-50 and B-54) to one group.

• **Elimination of the additional peace-time components in the Vinton-Taylor 70 Group bill.** This would state USAF authorization in numbers of planes only, leaving USAF to buy heavier planes without reducing its strength. As originally written the bill called for strength of 24,000 planes or 22,000 aircraft, less leaving it to the air secretary to decide which method to apply.

Boeing Carrier Cost

Latest Navy estimates indicate that the cost of an \$8,000-ton supercarrier (GVA-18) will be close to a quarter billion dollars.

This looks down to \$452 million for the carrier (original estimate was \$124 million); \$37 million for armament, radar, etc., and approximately \$55 million for the air groups to be put aboard the carrier. Work on the carrier began in September at Newport News, Va., with completion scheduled for 1953.

Navy has no firm estimate for the air groups when their companion will differ radically from as units now used aboard the big carriers. Larger and more expensive jet and composite-powered planes such as the North American AJ-1, Chance-Vought F7U and Douglas F3D will join the carrier air groups of the future. Cost of an air group for a Midway class (45,000 ton) carrier, larger now in service, is about \$14 million with about a 30 percent price increase indicated for the supercarrier's planes.



Shultz



Vaughan



Kennedy



Wright

Curtiss-Wright Changes Continue

Vice Presidents Wright and Kennedy retire; Vaughan leaves for Europe; four new directors are elected.

Resuming of Curtiss-Wright Corp. management under leadership of Paul Shultz, new chairman of the executive committee, took place last week.

Changes included deletion of four vice presidents and retirement of two vice presidents. The retirement of Guy Vaughan, former president, was chairman of the board, from service perhaps to company treasury; his position as president was announced a few weeks ago. Vaughan was succeeded as president last December by William S. Vaughan (Samuel Weller, Dec. 26), who also is president of Wright Aircraft at Wood-Ridge, N. J. The changes did not comment on the possibility that he might move to the New York office.

• **Major Plans.**—What major company plans were outlined by the board meeting after a slack week of these shifts were announced is not yet apparent, but numerous observers say the wave at the beginning of the year was the result of the departure of Shultz, chairman. Shultz is major partner of Shultz & Co., New York investment house, and has been a director of Curtiss-Wright since Nov. 1. He has been executive committee chairman since December.

With the changes, Curtiss-Wright may be able to suddenly shift with the production of planes. Since cancellation of its F4U maritime test division, the Stevens Division has not held a prime contract for any military aircraft.

Further significant financial readjustment may be attempted, whether in additional special rate dividends or reduction of capital structure through leases of stock.

• **Financial.**—Late in 1947, the company asked for tender of up to \$100,000 shares of Class A stock at \$150 per share. Only 20,583 shares were tendered and retained. This left 953,719 shares of the most outstanding.

The rest of the capital structure con-

unit of 7,412,699 shares of common stock. An additional unit should be similar to that made last year by the company for the shares during 1949.

Estimated losses last to the possible reduction of both classes of stock through the tender method. The company has more than \$100 million in cash and liquid resources, considered in some financial quarters as above that needed for current operations. Such resources might be required to facilitate a material reduction in the capital structure.

► **Merger Possibilities**—With the merger agreement changes and pending financial resources, Charles Wright will be in an improved position to pursue an effort to continue negotiations of mergers with other aircraft manufacturers.

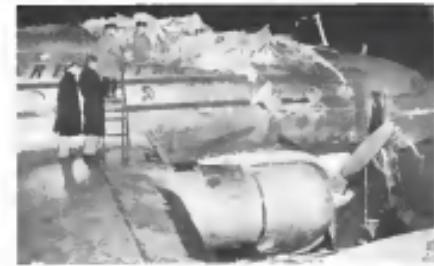
Official Air Force sources look with favor on reorganization in the weaker of aircraft manufacturers, and trust 1959 Charles Wright's name has been leaked

previously as speculation on such moves, first with Lockheed and later with Convair and Northrop (Aviation Week, Jan. 17).

Operation Haylift Wins Praise for USAF

United States Air Force won plaudits from western governors and governors last week for its "Operation Haylift" to save stock dispersed to move cattle and sheep back to the range land from Nevada to California—about a quarter of the country's lead cattle.

When the most drastic snow storm within memory hit the area, all alternate air surface transportation was blocked. Food dropships from USAF planes were the only hope for penetrating large-scale snowdrifts among some 2,800,000 cattle and sheep.



Connie Survives Mid-Air Crash

With a 15 ft. gash in the top right side of the fuselage, a Pan American Constellation last week was landed safely at Mitchell Air Force Base, N. Y., after a private plane had plunged into it at 4,800 ft. altitude.

The Pan Am pilot, Capt. George Knobf, put the plane down without injury to passengers or crew, but numerous other passengers in the Connie, bound from Indianapolis Field to London, Okla., were injured. At midweek, Pan Am engineers still were undecided whether to damage the plane or to fly it to Mitchell despite a Pan Am base at Miami and only one of the other four had definitely canceled by middle of the week.

CAR investigators held little hope of determining exactly what caused the collision. They speculated that the pilot of the smaller plane may have lost control of his craft, lost altitude, or was in level flight and failed to see the Constellation, which was climbing.

The collision occurred at 4:30 in the afternoon with visibility good. Knobf told investigators that he had just caught a glimpse of the smaller plane, a two-place Cessna, before the impact, and could not determine the direction of its

flight. The two men in the Connie were killed and parts of the engine and nose section were embedded in the Constellation. The remainder of the small plane fell to the ground.

The Connie struck the Connie just aft of the flight deck, tearing a large hole in the fuselage above the gear well. There was no appreciable damage to the engine, apparently in either of the Connie's engine nacelles. At midweek, Pan Am engineers still were undecided whether to damage the plane or to fly it to Mitchell despite a Pan Am base at Miami and only one of the other four had definitely canceled by middle of the week.

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► **Three Missions**—During the first week of the storm, USAF, improving on its new role, had three missions as its best known as "Operation Haylift."

First, it landed hay and concentrated food supplies into the area from Colorado and Chicago. The area's own stocks, like its livestock, for the most part were scattered in snow drifts.

Second, it launched "pigpen bombing" of holes of hay to snow-laden fields. USAF's biggest operation was out of the Tulsa, Okla., Air Force Base from which 17 C-82 "Flying Boxcars" kept up steady rounds of flights.

Third, it ousted road clearing equipment into the area.

The enormous importance of the hay "pigpens" is dubious. It required in getting feed to only a small fraction of the area's fields. Thousands of flights would have been required daily to blanket the range region with hay bombs. Thus, two, largely were utilized. Hay bales broke in midair, mixed with snow flakes, and dispersed over frozen territory. But the fact stands that dropships have at last been the only recourse for moving off sheerfaced fields. USAF personnel at least a stop gap measure, and road clearing equipment arrived and made possible a more easy of getting feed to fields.

Pan American Gets First Stratocruiser

Pan American Airways last week accepted the first Boeing Stratocruiser and flew it to San Francisco from Port head, but service with the four-engine, 75-passenger transport is still more than a month away.

The first plane, "Clipper America," will go into operation on Pan Am's route to Honolulu late in March after extensive crew indoctrination flights. By that time, Pan Am should have more Stratocruisers. The next four planes ordered by Boeing will go to Pan American the original Stratocruiser customer.

Next on the list is American Overseas Airlines, to receive the first of its order for eight aircraft in March. Later this month, National Airlines will receive the first delivery of its first Stratocruisers. Scandinavian Airlines will get its first Boeing probably in April. United Air Lines in May, with British Overseas Airways Corp. tentatively scheduled to receive the first of its order in July.

After getting delivery on its first five planes, Pan Am is supposed to receive three Stratocruisers a month until its order for 20 is filled—probably in September. Boeing now expects to complete delivery of all 51 Stratocruisers on order by the end of this year.



MAHWI at left. Powered by a liquid fuel rocket motor, the missile has been launched successfully several times since initial flight test success, has attained 10 mi. altitude.

Missiles Enter Production Stage

USAF to spend \$26 million this year on guided weapons in addition to research; \$28 million budgeted for 1950.

Guided missiles are passing from the developmental stage into limited production.

Approximately \$15 million will be spent by the U. S. Air Force for guided missile procurement this year. USAF and Navy have approximately \$25 million currently for guided missile procurement in the fiscal 1950 budget. This is being considered by Congress. This is in addition to research and development funds for guided missile experiments.

► **Training Model-C**—Hayvenhurst, USAF chief of staff, announced that the \$2.5 million appropriated recently approved by President Truman would be spent largely for training missiles and launching equipment needed to test USAF missile launching crews and technicians. Earlier Vanhook had announced that USAF was expanding its missile launching crews and groups to a guided missiles wing (groups) each consisting of three groups.

Leighfield, authorizing the USAF to construct a \$150 million long range proving ground for guided missiles was introduced in Congress last week by Sen. Michael Udall (D., Colo.), chairman of the Senate Armed Services Committee.

The proving ground would be open and jointly by members of the USAF, Navy and Army.

► **New Missiles**—Air Force also received two experimental missiles which it has

tried successfully during the past six months. They are:

► **Connie 774**—This is a 32 ft. missile roughly similar to the German V-2 (45 ft.). It was built at Convair's San Diego plant and will be put into use as a test missile model for USAF's missile launching crews.

The Connie 774 was first flight conducted last month at White Sands Proving Ground, N. M. The 774 was designed primarily as a test vehicle for experimentation with new launching techniques, fuels, and rocket propellant mixture. The missile will also be used in upper atmosphere research, at least a potential altitude of 100 miles.

► **North American MAHWI**—This test missile is 13 ft. long and was first flight last month at Alamogordo, N. M. It will be used to test atmospheric research, to determine the effect of various gases and also as a test missile for launching crews. It is 4 feet from a tall metal tower and is guided by radio within the tower during the first few seconds after firing. The missile has attained an altitude of 10 miles during one flight.

MAHWI was built by North American at its Inglewood plant.

USAFA now has one more guided missile development contract in the missile industry and has developed early requirements for 15 basic types of guided missiles.



NAHWI takes off on test flight. The 15-ft. North American missile is guided by the initial account by metal framework.



Nearest thing to the V-2 that the Air Force has is Convair's 774-long test, like the V-2, from right past the initial framework.

Flow Program

AMC-devised program designed to produce critical requirements.

By Alvinson McFarland

DAY-ON-Planning for an elaborate license human program which can be rapidly activated to produce entirely needed Air Force requirements on a large scale even in emergency is the goal of a series of industry meetings being conducted under the guidance of Industrial Planning division of Air Materiel Command.

Overall program calls for a total of 16 meetings covering 80 companies, including the 36 licensees companies and the other manufacturers who are expected to make the products under license.

New Programs—The new program is developed as a result of the experience with licensees arrangements in World War II which eventually were responsible for a large part of the total war production, but which developed a sense of complacency for the aircraft planning and production system before that war ended.

Typical of the meetings was a session at Wright Aeronautical Corp., Wood-Ridge, N. J., attended by representatives from Continental, Jacobs and Ranger engine companies to study technical problems involved in production of the Wright R-2000 engine. Detailed planning began after engineers of the four companies had studied the Wright production methods used in making the

engine and had toured the engine plant, examining parts, etc.

► **Study Agreements**—The licensees can now turn to the committee to obtain a modification to a proposed agreement to provide for a license in a second aircraft. Considered in the agreement are such clauses as:

- Legal rights and responsibilities of both parties
- Engineering control of the product and production changes
- Policy for field service.

Lt. Col. W. B. Carter, chief of the industrial planning section of the AMC Industrial Planning division, who is charged with developing that licensees' program, hopes to develop a standardized license agreement which will be flexible enough to meet various needed changes depending on the product, plant layout, equipment, lot size, sheet, parts, quality, etc.

► **Selection Panel**—Selection of the licensees' participants is planned as a cooperative arrangement between the AMC industrial operations and the licensees' companies whose contribution is selection is, of course, essential. Each licensee is expected to forward a complete item list and is responsible for any itemization necessary for the completion of the article.

Col. Carter says the overall program is aimed at achieving the following objectives:

- Giving a definite pattern to be followed in event of emergency industrial mobilization.
- Confining detailed planning to the plant where it is most essential, for items most needed.
- Items of high quality and reliability of end products and components will be stressed. This

is something that was not always achieved in the wild scramble of the early days of World War II, and it is one of the main reasons why present war is so heavy in the early days of the war.

► **Flow Guide**—Basic theory or product design is that they should flow from the engineering department of the licensee to the licensees. AMC places no reason why licensees may not propose product changes also, as long as they are cleared through the licensee's engineering control and do not interfere with interchangeability.

AMC plans are being conducted in just to allowances for the industrial requirements of the other services and the overall allowances of industrial capacity made by the Materiel Board.

Since the licensees' contractors have been in North American Aviation, Inc., Inglewood, Calif., and Pratt & Whitney, division of United Aircraft Corp., Hartford, Conn.

T-H Substitute Affects Manufacturers

The Thomas-Lewis bill for replacing the Taft-Hartley law with a more modified version of the Wagner Act contains the exception of contractors—including the aeronautics industry to the Railway Labor Act.

It directly affects, however, aircraft manufacturers and other employers whose activities affect interstate commerce.

Col. Carter says the overall program is aimed at achieving the following objectives:

- Giving a definite pattern to be followed in event of emergency industrial mobilization.
- Confining detailed planning to the plant where it is most essential, for items most needed.
- Items of high quality and reliability of end products and components will be stressed. This

is something that was not always achieved by the amendments of the Thomas-Lewis bill.

► **Industrial Disputes and Secondary Boycotts**—The bill would ban secondary boycotts, but only if they involved disputes between two unions. A union could refuse, for instance, to permit its members to handle products made by non-union labor or to work beside non-union men. But it would be unfair for an AFL union to handle products made by a CIO union.

Industrial disputes would be decided by the National Labor Relations Board or an arbitrator selected by it. But there would be no compulsion against a strike until the decision is rendered through a court order. An employer who refuses to engage in a strike in accordance with a justifications issued would be guilty of an unfair labor practice.

► **Closed Shop**—This would be retained

as the new federal law. Also, the present non-gone to more restrictive arbitration than law in states would be lifted. The new law would take precedent over state law in the case for employees who come under federal jurisdiction.

► **Right to Strike**—The employer, as well as the union, would have to file a 30-day notice with the U. S. Commission Service before either could commence or renew a labor contract. Failure to do so would be considered an unfair labor practice.

► **Contract Interpretation**—The bill declares it a public policy that all contracts include provisions for arbitration of all disputes after interpretation of the contract.

► **National Emergencies**—They would be handled along the lines of the Railway Labor Act with recommendations by bargaining boards, but no arbitration.

Unions as longer would have to file non-Communist affidavits in order to get injunctions from NLRB. This clause in Taft-Hartley has hurt the following CIO unions and helped others. The Communist leadership out of the CIO lost its Alfa-Charles plant in Milwaukie.

Republicans strategy is to offer many desirable parts of Taft-Hartley as amendments to the Thomas-Lewis bill on the Senate floor. Some are likely to get in. There's a good chance that the non-Communist clause will be kept and extended to include em-

ployers. Farmers may get only limited rights, such as requiring farmers' unions to remain independent of railroad and file claims in order to have bargaining protection.

"Hatchet Job" To Be Investigation Target

Conn's B-56 long range bomber continues to be the focus of controversy with new twists.

► **New Developments**

- Record bomb load of 42 tons was made by a B-56 from Ft. Worth and dropped on the Marsh, Calif., practice bombing range. The B-56 dropped one round bombing gear on landing at Ft. Worth.

► **Average 150 Mph**—The B-56 averaged over 150 mph. It made a bombing run of a low speed of over 300 mph. First bomb was released at 30,000 ft, and the second at about 40,000 ft. Both bombs were recovered successfully in the B-56's 55 ft. long bomb bay.



ALASKAN WINTER TESTS

With deep snow blanketing its tundra, the North American B-56 left early from Los Angeles Airport on the first leg of the trip to the Alaskan base.

legally exercised on the Convair B-56.

- **Pointed defense** of USAF purchase of additional Convair B-56s by Springfield who tested the unmodified bombers more capable of longer ranges and lighter armament than any other bombers in the world. He said it would make the B-56 the fastest bomber in service. Relaxed observers believed Springfield was referring to the B-56 which will have four jet engines in addition to its six Pratt & Whitney Wasp Major piston engines.

The "hatchet job" to which Springfield referred was obviously caused by a series of bitter attacks on the big bombers by radio commentators who referred to it as a "hitting streak" for jet fighters. Clifford, one of the USAF general officers who, at least in the early stages of test flying the plane, was not impressed with its performance prospects or operational possibilities.

► **Preparing Disaster**—USAF is now preparing a lengthy case history of the Convair B-56 project which will not go to combat critics of the plane by outlining virtually all the facts on the project available to the press. USAF spokesman a press tour to Convair's Ft. Worth plant last fall to collect data on all the reasons that caused some of the obstructions. The general board of USAF officials were strongly back a permanent permission to go over the B-56 with few major restrictions.

The record bomb load was carried as two 22-ton practice bombs with non-explosive warheads. This was easily twice the previous bombs load record set by a B-52 last October carrying one of the 22 ton bombs.

► **Average 150 Mph**—The B-56 averaged over 150 mph. It made a bombing run of a low speed of over 300 mph. First bomb was released at 30,000 ft, and the second at about 40,000 ft. Both bombs were recovered successfully in the B-56's 55 ft. long bomb bay.



CUTLASS ON TAKEOFF

Extremely high angle of attack during take-off of Convair's first jet Cutlass is shown here at the resounding experimental test equipment explains the intense burst measured on each wing tip.

PRODUCTION



Sikorsky Adds to Plant Space

Larger, more modern buildings increase production facilities and make possible higher rate of output.

Liquation of Sikorsky Aircraft's production space by approximately 40 per cent in a building program just completed defines great strides in the helicopter division of United Aircraft Companies. Work to resume in the spring, come, mention for the firm's able future.

New brick and steel building 132 x 140 ft with clear span of 132 ft houses both helicopter and motor car body production lines, and contains one of the largest and most modern paint spray shops in the country. A new brick 117 x 140 ft adjoins the production building. It has a 120 ft clear spanning with 23 ft diameter expected to be adequate for any helicopter or jet aircraft in the next few years. A new pilot training school and flight office will soon

ing the Sikorsky Division, adjacent the hangar.

► **Hopkinton Structures** — Substantially and substantially revised schedules to date from an early production line are being met on schedule, and last building, 58 x 340 ft which is a replacement for a brick structure, during fiscal 1957.

The new construction which totals 94,025 sq ft added to existing facilities provides Hopkinton with the most complete helicopter manufacturing facilities in this country, according to B. L. Whelch, manager. A straight line flow of materials and assembly is now possible with vastly improved manufacturing efficiencies.

► **Modine Facilities**—Better illumination, fluorescent lighting, a new modern de-pressurized paint room and facilities in

accordance with most modern safety practices are now provided.

Architects Abbott Kuhn & Associates are planning a four-building operation for the separate after structures, including a paint shop and new window manufacturing facility with the understanding the area of the new buildings.

► **Yer-A-Month**—Diversified production currently is centered on our four place Pratt & Whitney Wasp Jr. powered S-51 helicopters.

The model is currently being sold in combat use, and high modifications to the Air Force and Navy in the B-52 and the B-57. Production is at the rate of six machines a month, but could go much higher if necessary with the new facilities.

We are experimenting the place Navy helicopter designation XHBS-1, powered with 500 hp. Wright Continental engine and with all-new rear fuselage currently under test at Patuxent Naval Air Station.

► **S-92** Test-*Y* second version of the S-51, two-place helicopter, which was demonstrated last summer by a landing within the Pentagone Building room at Washington's National Airport, June 28, in non-Wright Field, Detroit Club for Air Force tests.

Plans for still larger helicopters at Sikorsky are in early developmental stages.

Pentecost Out

Henry Pentecost, member of the Hopkinton-Copake, Inc., board of directors, Helicopter Division, Inc., and T. H. MacLachlan of Seattle, Wash., who has been identified with the ship building industry of that area.

Following MacLachlan's election, Pentecost submitted his resignation as director and chief engineer of the corporation, but the board of directors has refused to accept it. Pentecost retains a controlling interest in Hopkinton Ltd., which is proceeding with development of the six-cylinder helicopter in England. The Seattle firm insists that Pentecost's interest in the English concern is simply an representative, however.



AVIATION WEEK February 7, 1949

NO. 34 IN THE SERIES FEATURING PROMINENT ESSO AIRPORT OPERATORS

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P. Brooks Morris, Esso Airport Operator, President of Cessna Aircraft Company, Inc., and Director for Unleaded, Bettendorf Aircraft, Bettendorf, Iowa.

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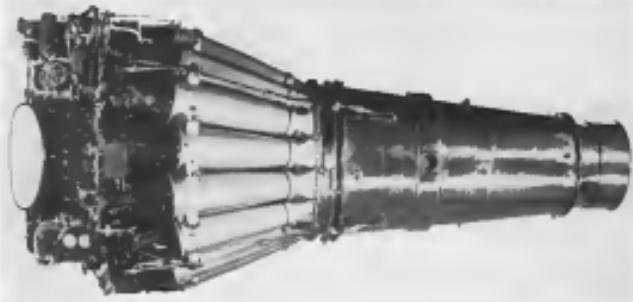


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AVIATION WEEK, February 7, 1949

ENGINEERING



Severe Test Proves Turbojet Reliability

Standard Goblin engine withstands punishing demands of simulated fighter combat operation in 500-hr. run.

Turbojet reliability matched a new high in a recent punishing test run in which a deHavilland Goblin 2, complicated 300 hr. by under what was not believed to be the most severe test conditions ever devised.

While it has been customary to think of the turbojet engine as in the "Mold of Volcanic," this British accomplisher has stopped the new engine with a distinctive certainty.

Only two minor changes were made—the burner fuel filters were cleaned after 300 hr., and a minor accessory drive was cleaned after 400 hr. by a "Molten Underfire" bath. The tests were devised to simulate the actual demands of a typical fighter in fighter operation. These demands are considerably more severe than those made on the propulsive engine, since the latter speeds only 80 miles operating life at cruising speed with frequent and short periods of maximum speed operation (climb and climb for fast runs).

In contrast, the turbojet engine, particularly a fighter installation, spends most of its life at maximum speed in fast, long climbs, maximum speed level flight and high-speed cruise.

It is logical, then, that the test requirements for the turbojet should be considerably more severe than those for the conventional reciprocating engine.

It was this consideration that prompted Sir Marshal Sir Alec Clegg, British Ministry of Supply, to initiate the Goblin test as a 3½-inches of warhead impact operating conditions, constant repetition of combat maneuvers with little or no downtime between flights.

A standard Goblin 2 was taken at random from the production line and installed in one of the test cells of deHavilland Engines Co., Ltd. at Hatfield, Herts.

The engine was subjected to 467 test cycles of 65 min. each, or a 30 min. "run" between cycles. Each cycle consisted of a simulated flight as outlined in the accompanying table.

P-Ten. Factor—Although the run was simulated, normal altitude temperature conditions were not maintained, with the result that the engine operated at unseasonably low level temperatures rather than the far more favorable low temperatures of high altitude.

Steady changes in speed and temperature of the turbine, which occurred at an average of over every 5½ min. of running time, compressed extremely severe conditions. The 500 hr. of operation actually required 452 min. 27½ rapid accelerations, 50 hr. at maximum power for climb and combat, 9½ hr. at maximum climbing power.

Test Cycle of Goblin 2 Engine

Condition	Time, min.
1. Start and run at ground idle 3000 rpm	13
2. Testing 3000 rpm with three accelerations from 3000 to 7000 rpm	13
3. Maximum power (idle) 30,200 rpm	13
4. Maximum climb 5700 rpm	13
5. Maximum cruise 3700 rpm	13
6. Constant maximum power 30,200 rpm	13
7. Decent 3000 rpm	13
8. Testing 3000 rpm	13
9. Shutdown for 10 min. standby	30
Total engine operating time	616
Total time at complete cycle	715

AVIATION WEEK, February 7, 1949

ENGINEERING 21

and 2099 hr. at maximum cruise. The engine burned 103,200 gal. of kerosene and 45 gal. of oil during the period. The total cost of fuel and oil for completion, an average of 17 figure daily, and equivalent to eight maintenance cycles of the globe.

Replacement of the former filters and the accuracy done required 18.2 man-hours, the total maintenance of the entire operating period.

By comparison, the Royal Air Force expends 1286 man-hours of maintenance for every 480 hr. operating time on its reciprocating engines, an asousing comparison in maintenance requirements between the two types.

Actually, however, several other costs were involved which were not planned during that period of maintenance of the turboprop engine but that was not done because of shortage of time.

► **Condition of Components.** Following the grading run, inspection of the engine revealed surprisingly little damage, and most of the components apparently could have continued in operation indefinitely. A study indicated that the cost of parts necessary to

bring the engine up to full serviceability after shutdown was only about 10 percent of the total cost of a new engine.

Worst hit by the test was the flame tube, a small mostly air-purified tube of the tubes which fractured and a piece of it passed through the turbine and out the tailpipe.

The tube showed typical heat-shock crystallization. Some were fully formed and still others were affected, indicating uneven fuel mixing and temperature distribution around the combustion section.

Combustion chamber casing showed only slight wear from these tube sub-

strates. Chamber head experienced carbon deposition but the air holes remained completely free.

Burners have heavy carbon deposits on the tip of the throat, but inspection indicates that this takes place only in the tip of the engine and stabilizes at this point with no additional deposition. Some nozzle remained clean.

An air to be expected, the case pieces showed no signs of wear.

Turbine inlet duct assembly was tested; the nozzle guide vanes and diffuser plate was in good condition except for the tail. Although combustion oil deposits were observed, these are a normal result of combustion.

► **Turbine Stands Up.** The turbine was in perfect shape after the test, the single nozzle which rotated uniformly throughout. Some blades were twisted to the flame tube, possibly which cause loose and passed through the turbine, but otherwise there was no blade fracture, snapping or bending. Maximum axial growth of blasting was 0.005 in.

The tailpipe, including outer cover, supporting struts and attaching channel, survived the test without any serious cracking or fatigue cracking. This actually has been a continual source of trouble with aircraft.

The D-10 Godiva test marks a safe state of aircraft progress and provides a significant indication of future endurance of this new engine.

With durability no longer a prime factor, there remains only the solution of fuel consumption problem to widen the usefulness of the turboprop.



FLIGHT DATE NEARS FOR BRAZAVILLE

British Aerospace Co.'s Brahman, 180-passenger transport, at 3000 ft. undergoing engine run-up tests at Filton, England, preparatory to first flight trials. Cofair's Customer requirements are designed to develop 30,000 hr. by first flight. Maximum gross weight is 200,000 lb., span is 218 ft., length, 127 ft. Estimated performance figures

are: Maximum continuous cruising speed, 250 mph. at 25,000 ft., initial climb, 600 ft./min. (about 10 ft. x 1800 psi), range, 1800 miles at 24,000 ft. load at maximum continuous cruise at 25,000 ft. (loaded mass balances on control surfaces to prevent aircraft flutter which could cause air rates hydraulic system).



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More Papers Briefed from IAS Sessions

These digest continue Aeronautics Week's presentation of subjects discussed at the 17th Annual Meeting of the Institute of the Aerospace Sciences in New York, Jan. 24-27, 1949. Other summaries appeared last week. Some of the papers will be presented in greater detail in future issues.

ROTATING WING AIRCRAFT

Following. Development of a Jet-Propelled Helicopter—R. E. Marquardt, President, Chief Engineer, and William E. Davis III, Project Engineer and Chief Test Pilot, Marquardt Aircraft Co.

This historical analysis compares recent pulse jet and compression-jet aircraft with conventional aircraft. The research is not considered comparative. Pulse and compression jet types have shown the same performance and are superior in load-carrying capacity to conventional aircraft for conditions up to about 2 hr.

Details are attached on the Marquardt 34-14 pulse jet helicopter, its preliminary flight tests and associated problems.

INSTRUMENTS

Plane Sky Camera.—Joseph B. Alves, Jr., Head, Navigation Branch, Aeronautics Experiment Division, Naval Bureau of Aeronautics.

This study gives details on conception, development, and principle of operation of an instrument for determining direction by polarized light from sky.

Advantage of this compass over other direction instruments is that it can be used in polar regions during twilight with favorable weather. Tests of early models resulted in direction accuracies of approximately 1 deg on the ground and 4 deg in flight.

Sperry Zenith Racer.—R. Kelley, Engineering Department Head, Flight Instruments, and C. F. Fagels, Engineering Section Head, Electronic Department, Sperry Corporation Co.

Precise flight with history, description, analysis, operational testing and comparison of the Zenith Racer with standard flight instruments.

AIRCRAFT DESIGN

Piston-Plane on Based-on-Layer-Coolant.—A. E. von Doenhoff and L. S. Loftus, Full Scale Research Division, Langley Research Laboratory, NACA.

Survey of present status of research on boundary-layer control conditions

possible by application of suction of profile drag by the character of turbulent separation and by increasing the relative extent of laminar flow, the interior of the cascade lift coefficient through control of laminar and turbulent separation and improvement of local characteristics of supercritical Mach numbers by controlling regions following the shock.

Possible improvements in airplane characteristics resulting from these applications of boundary-layer control are outlined along with general basis of these researches.

CLOUD PHYSICS

Methods and Techniques for the Study of Atmospheric Nuclei, Clouds and Precipitation.—John J. Stachnik, Research Laboratory, General Electric Co.

End result of this research is Project CLOUD (joint operation of Air Force, Navy and Signal Corps) is attempt to study better understanding of various physical processes that comprise growth, growth, maturity and decline of clouds and particularly how factors combining to form various forms of precipitating.

Highlighted are purely exploratory techniques based with tested and approved procedures in experimental investigation studies conducted by research and flight operation groups.

Lunar Soil Sampling of States and Canadian Clouds with Dry Ice-Irriting Liquid.—Associate Director, Research Laboratory, General Electric Co.

Analysis gives data from 5 of the 55 flights made under Project CLOUD in plane panel equipped B-17s to obtain information on processes involved in production of soil and snow and to study modifications produced by atmospheric dust.

Experiments on the Artificial Production of Precipitation at Wilkes-Barre, Ohio.—R. D. Cook, R. C. Gandy, E. L. Jones, and Ross Cox, Physical Research Division, U. S. Weather Bureau.

Summarized are results of nearly 150 independent experiments made to determine, in sustainable form, precise limits and economic importance of local modifications produced in producing precipitation and increasing the visibility for operating aircraft.

Aerodynamics, Compressible Aerodynamics.—California Institute of Tech College.

A simplified method of three-dimensional flow in neighborhood of stationary or rotating cylinder may be applied to these problems. (1) Determination of local influence of cylinder and neighborhood of cylinder zone in a rotating wind tunnel, (2) flow in wind machine operating at conditions differing from those of the design.

Solution for cubic flow field is given for machine having conicoid cylinder for motor and outer boundary, and particularly simple solution follows for a single cylinder in an infinite medium of similar shape.

Consideration of equation at conditions other than design conditions in solving solution of "aerodynamic problem"—one where block geometry is other than rectangular and irregular. Problem is related to solution of an ordinary differential equation by linearization and by satisfying boundary conditions only at trailing edge of the given block one.

Aerodynamic Hysteresis as a Factor in Critical Flight Speed of Castagnier Dihedral of Stalling Condition.—A. M. Melcher, Lewis Flight Propulsion Laboratory, NACA.

In study of flutter of compressor and turbine blades, assumption was made that absolute magnitude of oscillation aerodynamic forces and moments are small at first as at zero angle of attack. At first, magnitude of forces and moments are unchanged, later forces and moments are changed, later dynamic being caused by lag of aerodynamic damping and restoring forces behind the velocities and displacements at still, that giving rise to hysteresis effect. Decrease of critical flutter speed at still was thus theoretically shown.

Results were applied to given aircraft, and conclusion of experimental and theoretical results was found possible by knowing that right of aerodynamic lag vector at angle of attack-lift curve. Lag caused effective vertical damping to decrease, thereby explaining low value of natural aerodynamic damping obtained at still.

UPPER ATMOSPHERE

Solar Activity and the Earth's Atmosphere.—Donald H. Menzel, Associate Director for Solar Research, Harvard College Observatory.

Electromagnetic portion of solar energy can be absorbed into a number of regions, according to wave length or frequency. From standpoint of terrestrial effects, in ultraviolet and soft X-ray regions are most important. If the

nan induced energy like black body at temperatures of 4,800 deg. measured at reference to water of about 1,500 A would be almost negligible. However, solar precession and solar convection patterns temperatures ranging from 25,000 to more than 1,000,000 deg. Theoretical study indicates that these ranges give off considerable energy in the far ultraviolet at levels of emission losses. These radiation and pressure are responsible for atmospheric, cosmic, and heating of upper atmosphere layers.

During The Upper Atmosphere with Metres-Ford L. Whipple, Associate Professor of Atmospheric, Harvard College Observatory.

The paper concerns research on the upper atmosphere and high-altitude balloon by means of photographic observations of meteors from two sources. Included are brief descriptions of gas and ionosphere, stations set up in New Mexico and Super-Schmidt cameras.

Results give an determination of the ionization effect in upper atmosphere densities, atmospheric density down to 90 km. and certain ballistic results. Special attention is given to problems of ionization around upper atmospheric many features observed by radio techniques.

Upper Atmospheric Measurements by Means of Large Balloons-T. A. Bergstrahl, Physics Balloon sounding Research Station, Naval Research Laboratory.

Upper atmosphere investigations have been carried out in several fields in a period of over 2 yr. Determinations of atmospheric densities down to 70 km., and ionization concentrations measurements up to 120 km. Analyses temperature shows well determined from variation of pressure with altitude and from ion pressure measurements.

Constraining measurements were made on Geiger counter tube telephones and cloud chamber. Vertical distribution of ozone was determined from spectra obtained by using solar spectrographs in the sunspot. Bright measurements of electron density distributions were obtained.

The Navy Has Its Spyholes—E. G. Drennan, Meteorological Cryptologic Bureau, Office of Naval Research.

Completely reversible plastic balloons have been developed and are being utilized in broad regions of upper atmosphere research. In 52 flights, these have been carried to altitudes exceeding 50 km. Scientific instruments are carried able to collect new information on cosmic rays, biological phenomena, meteorological parameters, etc.

FLUID MECHANICS

Two-Dimensional Jet Mixing of a Com-

possible Fluid—S. I. Ha, Cornell Aeronautical Laboratory, Inc.

Mixing and divergence of supersonic jet exhausting into a transonic stream are investigated theoretically. Initially, flow is assumed to be laminar. If velocity in jet often slightly less than that of surrounding stream, using the method of small perturbations and ordinary boundary layer approach, the equation of motion of two-dimensional flow reduces to the form of the equation of heat conduction whose solution is known for any given boundary condition.

By transformation similar to that used by Van Krevelen and Tijms, exact solution of the two-dimensional jet mixing of a viscous compressible fluid can be obtained by successive approximations, starting with solutions obtained from mixed of small perturbations. Cases of turbulent flow are also investigated by means of Richardson's theory of hot turbulence,

Some Recent Measurements in a Two-Dimensional Turbulent Channel—John Louis, California Institute of Tech. University.

Estimated are detailed measurements of zero and turbulent velocity fields in two-dimensional, fully developed turbulent channel flow, including distributions of velocity fluctuations, stream line coefficients, turbulent scales and micro-scales. Afforded are results of measurements in laminar boundary and Reynolds number effects on turbulent velocity field. Distribution of various turbulence energy terms versus the channel is also obtained.

STRUCTURES

Study of Bending Torsion Aero Elastic Modes for Aircraft—Wings-Martin Company, Champaign, Engineering Mechanics Division, and Yaelil L. Lata, Research Mathematician, Midwest Research Institute.

Means of arriving at stability data necessary for natural motion of bending in torsion are clearly outlined. The present determination of shear deflection and torsion modes of the system are clearly shown. Comparing in various mode interests with those obtained at least 95 percent of critical speed is attained, it then readily determines the flutter value of α_{cr} . Non-critical mode interests sharp increase in stability in proximity of flutter.

Corporation is also made between natural mode characteristics and system response due to forced excitation. Lateral stability effects on flutter indication of approach to a critical state. From it appears that fighter flutter testing is best carried out using the forced vibration technique.

Landing Gear Oscillations Due to Un-

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stable Sliding Friction—It is Wigert, Structures Engineer, and Fredric M. Hock, Stress Engineer, Lockheed Aircraft Corp.

The study shows, theoretically, that unstable, self-excited shedding oscillations of landing gear may occur under service conditions. Primary requirement for such oscillations is that coefficient of sliding friction between tire and runway decreases with increasing shedding velocity. Such variables only matter much for rubber tire as set presented.

Consideration of influence of other variables on initial stability of oscillations and maximum amplitude, loads, and stresses that may be involved.

Compressive Tests of Clever Panels with Circular Hole Reinforced with Circular Doubler Plates—Williamson D. Kroll, Mechanical Engineer, A. F. Meister, Materials Engineer, National Bureau of Standards.

Studies were made with and without circular reinforcement of 3-in. central hole in 14-cavet sheet panels 14 in. long, 24 in. wide, and 0.188 in. thick, with radius of curvature ranging from 15 in. to infinity.

Conclusion is that effect of curvature on stress distribution around hole is negligible, and is realized that results reinforcement attached with one row of

studs did not appreciably reduce stress near hole.

Stress distributions calculated from plane stress theory agree closely with those observed for panels with transversely loaded holes. For reinforced panels, observed stress were higher in magnitude than that shown calculated from the plane stress theory.

Numerical Procedure for the Stress Analysis of Stiffened Shells—John E. Dickey, Structures Research Division, Langley Research Laboratory, NASA.

Procedure is based on usual assumption of shell theory analysis that the plane stress approximation is justified by stiff buckling. Method is considered enough to include effects of restraints as well as secondary effects due to reduced warping usually reflected in stresses in lag when the shell is loaded primarily in bending and bending stresses due to tension when the shell is loaded primarily in tension.

Quantities determined directly are: variance distribution of nodal displacements, and relative solution and displacement of the cross section. Numerical equations defining these quantities are solved by method of simple iteration.

Details of procedure's application to

a simple problem are given, and results obtained from a more complex problem are summarized.

HUMAN ENGINEERING

Display Problems in the Use of the Omni-Directional Range Instrument—A. C. Williams, Jr. and Stanley Rosen, Dept. of Psychology, University of Illinois.

Speed and accuracy with which 48 pilots (16 non-instrument, 16 commercial with instrument rating, and 16 aeronautical-instrument) could use readouts of eight different VOR aircraft altitude displays to solve typical navigation problems were measured. Turnover and return pilots made fewer errors than non-instrument pilots but there was no significant difference in these scores.

So-called pictorial displays, giving an indication in terms of graphic representation of actual spatial relations involved were significantly superior to so-called symbolic displays presenting information in terms of dot readings, needle deflections and numbers. One pictorial display was found to be superior to all others.

Reliability of techniques used was inferred to be adequate from measures of internal consistency and from consistency of results obtained from independent groups.

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Schweizer's All-Metal Sailplane

Production plans for 1-23, developed from craft that won national championship, marks rebirth of industry.

Quantity production of the 1-23 Model 1-23 high-performance sailplane is planned by Schweizer Aircraft Corp., Elmira, N. Y. The all-metal, single-seater is priced at \$2195 and will be manufactured at production rates of 10 ships, beginning early this year.

The new model was developed from the 1-23, which was the national class champion in 1947, and the prototype is already being put through rigorous flight tests.

► **Flew by Champ**—It was the subject of a "hot fight class" in which the leading sailing-pilot pilots of the country tried out the craft and made recommendations.

Among those who flew the new ship were four national sailing champions: Paul MacCready, New Haven, Conn., 1945 champion; Dick Conrey, Weston, Mass., 1947 winner; John Robinson, Pasadena, Calif., 1946, '48 and '49 champion; and Bill Leibach, New York winner in 1955.

► **Design Factors**—Fuselage wing and empennage skin plating at 287 A

slid. Skin fittings are of 7576 alloy for extreme high strength.

Even with this truly all-metal construction, however, the 1-23 weighs only 375 lb empty. The ship was designed as a Class 1 sailplane with a design speed of 123 mph and a minimum design load factor of 8.54, an exceptionally high figure.

With permission for 190-lb pilot and 12 lb of equipment, the 1-23 has a gross weight of 666 lb, giving it a wing loading of slightly more than 4 lb per sq ft.

► **Cockpit Equipment**—Interior metal construction permits added dimensions to the cockpit because of the elimination of large frames and internal structure common in wooden sailplanes.

The canopy is molded Lexon to fit the contours of the fuselage, providing maximum drag.

Air behind the pilot may be used for radio, barograph or oxygen.

► **Absent Miles-Miles**—Design of the 1-23 began in 1947, but construction of the prototype did not start until

Schweizer 1-23—Basic Data

Span	45 ft. 10 in.
Length	20 ft. 4 in.
Height	6 ft. 10 in.
Airfoil Ratio	9.25:1
Wing Area	197.5 sq ft
Empty Weight	360 lb
Useful Load	241 lb
Gross Weight	600 lb
Wing Loading	3.1 lb/sq ft
Minimum Landing Speed	2.60 ft/sec
Maximum Landing Speed	7.71 ft/sec
Maximum L/D	16.60
Design Speed	119 mph
Design Max. Glide Speed	113 mph

May, 1948. The ship was completed last July 4, in time to participate in the 1948 National Sailing Competition. The 1-23 won the class division of the 1-23 and tied for 11th overall. It is claimed to be very stable, the tail will not be forced into a spin from which it will never recover with upsets.

It is equipped with a set of spuds for glide control, the control being linked with the wheel hubs. A single-wheel landing gear is used with rebraced main fairing of the wheel and a small rubber hubbed tail.

► **Effect of Stalls**—Announcement of Schweizer production plans is one of the early results of the soaring interest in finally recovering from the doldrums of surplus military gliders.

Although the nation made nearly 10,000 sailboats in the production industry, it provided a tremendous impetus to the gliding sport by expanding the number of ships and pilots every, many times in a few short months.

The surplus gliders, however, were designed for military operations and that are much heavier and of course poor impact performance.

As a result, the industry is confident that the design will prove a blessing in flight through creating a much larger demand for high performance gliders that would normally have existed.

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Fifth WE HAVE THE valves you need made to order. Before leaving our factory all valves are performance tested according to the standards which they are to fit. Our valves are tested under simulated operating conditions for strength, leakproof closure, seat life, losses of operation - your requirements that they will do the job which they were designed.

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Fitter in performance
Fitter with savings that are hard to believe*

Thrust Stand Devised For Better Accuracy

Flight Test Division, Air Materiel Command, has developed a static thrust stand that may boost thrust coefficient measurement accuracy to $\pm 1/10$ of 1 percent.

Secret of the new precision lies in mounting of the engine test rig on scales in slightest and horizontal component of thrust is measurable.

► **Rake Method**—Thrust measurement in flight has presented problems since turbines first became available. Easiest and most successful method was the use of a pressure raker of wires or of bayonet mounting at right angles to a main thrust measured in the tailpipe of a jet engine. These take engine load and strain pressure, combustion gases which produce the static thrust value of the engine.

This method is not entirely satisfactory, mechanically, because location of the raker in the tailpipe exposes it to high temperatures that often burn the insulation. Also, vibration of the tailpipe frequently forces the rake loose to cause loss in flight. And the rake requires use of expensive straining instruments in the plane or interconnecting equipment for ground weighing.

AMC now is standardizing method of aircraft landing gear, and calculations show that all aircraft manufacturers could incorporate the system in planes while still at the factory.

Research indicated that any one engine of a given type can be used to calculate all rakes needed for a particular type of aircraft within an accuracy of $\pm 5\%$. However, such calculation does not provide sufficient information on duct or insulation losses.

► **New Setup**—To solve the problem, AMC has constructed a dimmed stepped platform mounted on four elastic isolators and carrying a Gov. & Stevens weighing scale. The isolators are made of three blocks of the same base cast aluminum. In addition, four C & B weighing cells are used to measure the exact weight of the plane.

The pilot enters the airplane mounted on the platform and pushes the rudder for takeoff. At this moment the exact weight of the craft is measured.

The engine is then accelerated and simulated afterburner is performed while weight measurements of the vertical and horizontal components of the thrust and weight are taken. This prevents a complete aircraft engine shutdown.

The present stand can accommodate fighter aircraft weighing up to 36,000 lb. and delivering as much as 12,000 lb. thrust. If the test program proves satisfactory, larger platforms can be built for jet aircraft.



"We Get Smoother Controls and Lighter Construction

with Torrington Needle Bearings,"

say Convair Engineers



Reducing weight as a goal top performance and low operating costs, engineers of Convair Aircraft Company have spent a great deal of time in the design of aircraft components. Especially lightweight design methods and standards called for Type A-10 Torrington Needle Bearings as early applications in the all-new Convair.



Encapsulating compact design is flat close-up of one of the elevators for landing on the Convair Model 100. Here all the bell cranks, hydraulic lines and other parts are integrated. Extremely lightweight design methods and standards called for Type A-10 Torrington Needle Bearings as early applications in the all-new Convair.



"Ingenious Needle Bearings" also reduce weight in the control surfaces by a few thousand feet that there are virtually eliminated, says Mr. Schlesinger. The new Needle Bearing A-10 is unique with reduced noise, twice greater load-carrying capacity than the ordinary service life of the plane.



Where loads are largely static, as in the tail wheel, shore, the full complement of bearing sizes offers maximum bearing capacity and minimum weight. The new Needle Bearing A-10 is unique with reduced noise, twice greater load-carrying capacity than the ordinary service life of the plane.

The high capacity, small size and anti-friction efficiency of Torrington Needle Bearings can be used to improve your product, too. For complete engineering service, call or write the nearest Torrington office. **Torrington Company**, Torrington, Conn., South Bend 22, Ind. District Office and Distributors in Principal Cities.



TORRINGTON NEEDLE BEARINGS

Bearing • Spherical Roller • Straight Roller

Typical Roller • Ball • Needle Bearing

TRUSCON PLANNING BOARD



ABOVE: Truscon's ability to plan, manufacture and erect the exterior of this Lockheed Hangar Building is a good example of the wide scope of Truscon's product service. The building is located at the Lockheed Hangar Building, Lockheed Field, Long Island, New York. Previously you may have seen the Truscon plant, now you can see the exterior of Truscon's product service in action.

Lockheed Hangar Building Illustrates Wide Scope of Truscon Steel Building Product Service



ABOVE: A view of the Truscon Hangar Building on the Lockheed Hangar, Lockheed Field, Long Island, New York. The building is, and the Periodic Steel Windows, mechanically operated, at the left. Write for complete description of this new industrial steel column system.

ABOVE: One of the recently completed Truscon Buildings located at the Lockheed Hangar, Long Island, New York. Truscon has supplied almost the entire line of steel structures required for this new industrial plant.

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO • Subsidiary of Republic Steel Corporation

NEW AVIATION PRODUCTS



Handy Sprayer

Compact, portable sprayer for small industrial paint jobs is offered by Behr Corp., 515 Andover Blvd., of Massena, N.Y. Model C-1000 is self-contained, and operates with hand or compressed air, depending on how it is to be used. Total weight is 4 lbs., including nonbreakable plastic container. Standard water operates from 115 psi, or at 60 psi at speed of 18,000 gpm, producing over 16 lbs. pressure. Internally adjustable nozzles provide choice of fine, sharp-spray patterns. Different parts are few, simple and accessible for easy cleaning. Pistol grip trigger control, and general balance allow easy handling.



Machine Shop Aid

For rough, heavy jobs of parts difficult to hold in one, adjustable angle plates made by Chicago Tool and Engineering Co., 81835 Chicago Ave., Chicago 75, Ill., are offered for drilling, sawing, grinding, layout, inspection, and other jobs which would ordinarily require special arrangements. Arms are provided with bolt holes for fastening angle plate to machine table, and eight bolt holes are provided in each angle plate holding arm. Adjustment is to 100 deg. and graduations are given for all angles. User is ready for instant use by locking support screws. Plates are available in two sizes, 6x6 in. and 9x9 in.



For Heat Work

Design specifically for tool and die work, hardening and drawing, nose face model clamps, furnace, offered by E. H. Heggen Co., 6530 Cottage Grove Ave., Chicago 17, Ill., has temperature range of 180 to 3000 F. Temperature control is achieved by stepless resist controls, integrally mounted. Furnace has two

sets of heating elements, top and bottom, consisting of two sets, two rods making up each element. It is reported that temperature as low as 100 F. can be controlled with some accuracy at higher temperatures in industry because of wide diameter top 5 in. wide, 6 in. high and 12 in. deep. Overall dimensions are 28 in. wide, 29 in. deep and 48 in. high. Standard operation is on 220v, single phase, but 110v would also available.



Petrolensa-Resistant Rubbers

Sealable rubber compounds, Buna N, Hyprene or Neoprene, based on polymerized ethylene and propylene, products are offered by Statton Rubber Co., 179 Northfield Road, Bedford, Ohio. For lubrication, seal greases, seals, washers, tubing, sealed gaskets, and extended cross sections for application as fuel lines, dust covers, filters, diaphragms, vibration dampeners, etc. Reported to have long life and maximum seal under adverse conditions. These rubbers can be supplied with tensile strength from 500 to 2500 psi, elongations from 100 to 600 percent. Various seal additives will provide uninterrupted qualities. Products are claimed to withstand temperatures ranging from -60 to 725 F.



Die Transfer Table

For transferring dies from press having extended base, die handling table has overhanging top counterstrengthened to provide greater strength for handling dies weighing up to 1000 lbs. Unit is made by Evans-Harwood Corp., 7229 Madison St., Garfield, N.J. Overhanging section, 14x24 in., is used to bridge gap caused by press base extension, and for extra safety, retaining bars are provided on three sides of table. Hydraulic elevation is 28 in. (low position) to 44 in. (high position). Unit has 10x16-in. main top, single speed gear pump, four legs, tip height 20 in., 5x6-in. steel center, and two 5-in.-dia right

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SALES & SERVICE



With the first-place Exide Clipper, just tagged at \$1995, the Exide team is once more in leading edge in the growing four-place field.

Although it is the lowest-priced plane in its class, it pretty resembles the Exide-Stinson Voyager.

Lightplane Trend to Four-places

More than half of 6969 deliveries in 1948 are of four-passenger type: farm and business use increasing.

Personal plane manufacturers delivered 6969 aircraft in 1948, with a total dollar value of \$27,966,800 (not minus federal tax holding gains).

Back to previous production levels as a measured base, the year's shipments advanced a continuing strong trend to four-place machines with particularity for business and agricultural uses.

More than half of the total (3501 shipped) were of this class.

► **Used Plane Market**—Effect of the glutted and plane market on new two-place planes also contributed seriously to shrinking their volume, until in December, only 42 two-places were sold compared to 145 four-places.

For the second year running the Stinson Voyager (and its modification, the Stinson Flying Steamer Voyager) took honors for sales in a single model, with a total of 858 Voyagers (Stinson Voyager delivered, 1931 by Stinson division of Convair and 49 in December by Exide Aircraft Corp., which purchased the plane). Some indication of the total shrinkage of the market is seen from the fact that in 1947 Stinson delivered totalled 2622.

► **Plane Compartions**—Total sales in 1948 were only 448 aircraft in numbers of the personal planes advanced in 1947. The higher and cost of the 1948 planes may have accounted up to a part in the 52 percent growth relative to the dollar volume of 1947.

Compared to the peak year of 1946

in adding a popular airplane to the Exide line, and a considerable volume of replacement parts business from Warbird owners in the field.

On the basis of their high performance and high cost for four-place even two-place aircraft and Ryan should again be clearly competitive for a large portion of the total dollar spent in 1949 for civil aircraft.

► **Sales Totals**—Summarizing, the 1948 personal plane sales were allocated as follows:

Plane	Number	Dollars
Convair	1631	\$6,705,000
Piper	1479	5,093,000
Stinson	581	1,962,000
Laurelton	716	1,945,000
Rock	678	5,955,000
Acme	999	1,192,000
Ryan	481	1,239,000
TPMCO	252	866,000
Exocraft	132	611,000
Taylorcraft	105	186,000
Reliance	49	146,000
Republic Seabee	24	105,000

► **World Engine & Airplane Corporation**—Delivered 31,724 aircraft in 1948, with a total dollar value of \$33,900,000. But these were not included in the official 1948 totals of Personal Aircraft Council of Aircraft Industry, Inc., official reporting agency, since the same airplanes had been previously reported when they were built to TPMCO and shipped to Foreign.

► **Two-Place Shipping—Crosses**—led to two-place dominion with 492. Other four-place deliveries reported: Stinson, 513; Rock, 678; Ryan, 451; Acme, 760; Piper 112; just counting 49 the sum delivered to (Dealership) Laurelton, 7; Bellanca 49; and Republic 26.

Piper led in two-place deliveries with 1912. Other two-place shipments reported: Convair 296; Stinson 247; Laurelton 247; Acme 236; Swift 152; Fessag 151; and Taylorcraft 105.

Crop Dusting Code

Washington State Aviation Assn. has proposed a crop duster and sprayman code setting up minimum standards of pilot experience, plane type and fines and responsibility for financial operation in these fields.

One shortcoming dealer with an 8580 airplane, a biplane with holes punched in the bottom and a lot of unpaid bills can damage the entire legitimate crop dusting industry in this state," Robert N. Ward, executive secretary, said in introducing the code.

He said the association will ask the state director of agriculture to incorporate the code as a directive, thus giving it legal status so it could be enforced by state and county offices.

Encoupe Can Be Made Roadable

A jet which permits conversion of a standard Encoupe to a roadable model has been developed by William Holland of South Georgia Flying Service, Valdosta, Georgia.

Side-sliding flight was conducted recently when Holland flew to Miami's Miami Airport, passed briefly to show the wings at top of the climb, and翔ed away at 30 mph. down the highway in the Cessna 172 at 10,000 ft. of the Miami All American Air Marathon.

Wings can be cracked for flight or folded and stored on top by two people in 30 minutes, Holland reports. The slats joint being removed for flight by lifting off from a permanently-mounted pedestal attached to either side of the aircraft. The wings attach to the center section by two bolts at each side—at the leading gear strut and the rear spar.

► **No Ground Cooling Problems**—Maximum length of any single ground trip in his roadable Encoupe so far has been only 27 minutes, yet designer Holland expects no ground cooling problems. Oil temperatures have never exceeded 190 degrees, with engine operating at 150 rpm—producing ground speeds to 35 mph.

Essentially Holland hopes to have a roadable jet which he can market. First he plans additional tests, modifications and checking into requirements that may market and lower aircraft to study conversion handling with the wings stored overhead, and try a conversion cylinder guard for the propeller. ► **Ground Handling Adds**—Wing panels of the Encoupe are easily detachable at a point just beyond the leading gear fittings. Stability of the Encoupe's ground handling, stemming from its sterically mounted and separate front, is another advantage leading toward roadability already provided in the design.

Bob Sanders, head of Southern Aviation Inc., west Florida distributor, reports that Holland has discussed the conversion with his organization but is conducting the development independently.

Similar conversion problems yet to be solved in the development indicate the conversion would be marketable, but research progress made by Holland thus far is quite promising. Among the problems:

- Most state highway requirements set a maximum width of vehicles at 8 ft. Width of the double-tail Encoupe is 8 ft. 3 in.

- Propeller guard as now designed does not adequately leaves the winglet blade to prevent a propeller blade hitting into the propeller from the front.

—ALEXANDER McSURELY

BRIEFING FOR DEALERS & DISTRIBUTORS

MAKE SPINNERS EXCEPTIONS—A comment which makes sense but may be hard to sell in the aviation industry is the suggestion of Bob Sanders, head of the west Florida distributor organization, that the safest approach in changing regulations concerning spinner requirements would be to make any spinner replace the standard for a license for a private pilot, and then require the pilot to have as additional spin rating if he is to fly in any spinable aircraft.

Sanders believes that proposed disallowance of spin tests done private pilot tests should be accompanied by wingtip rudder recovery instructions.

REDUCED RATE EXPERIMENT—Bennard Bellanca, operator of Buffalo (N.Y.) Marine Airport, is planning a new reduced airplane rental rate experiment when he resumes operation this spring. He hopes it will bring him enough increased business to more than break even on the low and cost. Bellanca proposes to start two planes in the 67-87 hp. class for \$5 cents a mile.

This will average between \$5.50 and \$4 for sole time in aircraft hired and paid rates in his area of \$5 to \$1.50 an hour base. For dual students and for one who adds the cost of fuel, the fee of \$3 an hour to the airplane owner as a minimum protection, the \$5 and \$1.50 rates. At 100 flying rates it costs approximately \$1500 at his rates, yet get enough fuel for a private pilot license (\$100 dual plus \$50 per solo).

Bellanca's plan would make the cost about \$150. "I can announced I can operate at these rates and make money. If I make a profit of a quarter of a cent a mile and have 50 persons flying, I will hardly break even if I close 5 hours a week and have only one plane in the air," the Buffalo operator says.

AEROMATIC SALES TOUR—Sid Felix, manager of Aeromatic Propeller Department of Kippert Co., Inc., has started three factory sales representatives, George Lovis, Dick Andrew and Dick Rose. They will make home office in company airports on a two-months' national sales tour, but in which distributor agreements will be signed to replace factory factory dealer agreements.

New propeller cells for increased durability discuss "with the majority of the license holder to the factory." A new survey for the Aeromatic propeller, a "Sales-Center Center" which gives a pilot an overall control of engine speed and performance when desired at high altitude, will be offered as an optional extra.

PILOT FOUR-PLACERS GET STALL INDICATORS—Installation of the Joe Sibley Flight Stall Warning Indicator (FSI) will be standard on all four-place Piper aircraft this year. The installation was already standard on the Sedona, Voyager and Sirius Flying Station Wagons, which are also part of the Piper line, and the indicators are added to the 1970 Piper Family Cruiser (PA-14) and the new lowest-price four-place the 339T Piper Clipper (PA-16).

PILOTS ON FOUR-PLACERS—Despite the fact that William T. Price has sold more two-place-than methods in the airplane business, he is now convinced that the future of the personal plane business is in the four-place field.

In announcing the Clipper, the Piper organization cited it "as important milestone on the road toward eventual domination from the market of most two-place aircraft except those for training, agricultural or certain industrial purposes."

It is pointed out that the four-place costs less than many two-place planes currently on the market and achieves the extremely moderate (approx.) cost of \$739 a seat. When it is considered that the Clipper sells for only about a third more than most new automobiles on today's market, the Price brights offering takes on new attractiveness.

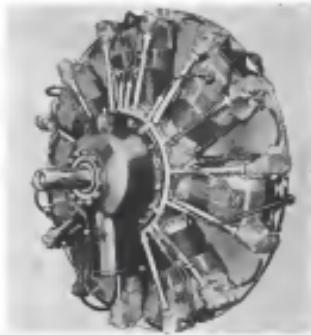
NEW MAILMAN STRIP PROGRAM—Milwaukee Huber Cos. Inc. has approved a \$110,000 program for further improvements at the downtown Milwaukee airport, which will include an administration building, approach road, utilities, drainage and a surface airport.

Approval will be made to get \$75,000 of this money from the federal airport program, and state airport aid is also expected.

PLANE The T-38, manufactured by North American, Inc., was an industry-wide competition for an all purpose Air Force training plane to prepare pilots for high-speed jet aircraft. Top speed, 390 mph. Service ceiling, 31,600 ft.



ENGINE The Wright Cyclone 11B, an 800-horsepower aircraft engine developed by the Wright Aeronautical Corporation for the T-38 and other military trainers. On its crankshaft and at the propeller thrust location are SKF bearings.

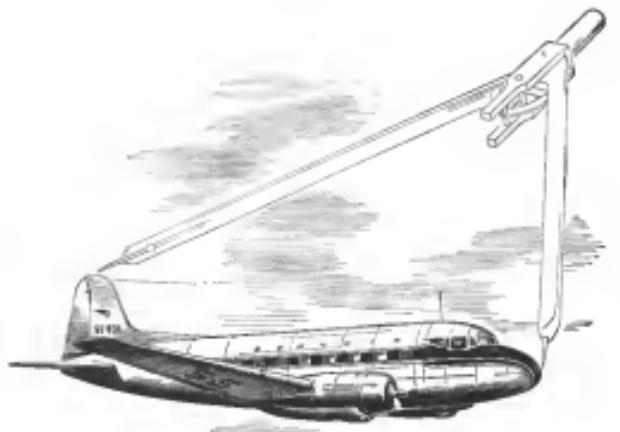


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The Scania carries 21-32 passengers, or, in other words, it provides the exact dimensions demanded outside for intra-continental routes. Passengers can enjoy substantial comfort while at the same time the Scania satisfies the demands made by aviation companies with respect to safety and economy. In short, the Scania is an ideal passenger plane. All — the Swedish partner in Scandia and Aerotours — which ranks among the leading long-distance airlines and will not be meeting but the best has signed a contract for a fleet of twenty planes. This fact and the great interest exhibited in the plane throughout the entire world is a proof that the designers have carried out their task perfectly — not least in their judgment of the requirements for an aircraft of this particular size.

Scania

SVENSKA AEROPLAN AKTIEBOLAGET · SAAB AIRCRAFT COMPANY · SWEDEN

AVIATION WEEK, February 7, 1949

FINANCIAL

Carrier Credit Aided by Dividends

Bright outlook for earnings helpful in restoring basic values for common and preferred equities.

Airlines credit has been strengthened by maintenance of regular dividend payments on preferred shares of three major air carriers—American, United and Northwest. Such dividend action on planes a喜ome cheerful outlook for the period ahead.

The past winter was particularly critical for the industry and considerable doubt was evident as to the continuation of dividends on these three equities.

The bright of uncertainty existed around dividend declarations due in the closing months of 1948. Despite successful reorganization of that handicapped situation, particularly paralleled when quarterly write-ups again became due early that year.

► **NA Dividend.**—Probably the greatest apprehension surrounded the preference dividend action of Northwest Airlines. Despite a December award of \$300,000 in arrears still pay, this was estimated to have lost more than \$2.5 million last year. Nevertheless, the regular quarterly dividend of \$1.00 cents per share was paid on Dec. 1, 1948. Subsequent to that date, Feb. 1, 1949, stock was again revalued as undervalued.

The relative weakness of these two cash dividends unquestionably was a major factor in influencing the Northwest decision to maintain such dividend payments. With 300,000 shares of 4.6 percent preference shares outstanding, each quarterly payment amounts to \$112,500. The preference shares were revalued in April 1947, at \$25 per share and can now be an undervalued dividend record. It is my suggestion that, when this may be attempted, the reason an important attribute to each dividend.

► **Equipment Purchases.**—Notwithstanding Northwest's loss a number of major difficulties before its financial affairs may attain a measure of stability. It is known that the company has been experiencing significant problems. Yet to come is the introduction of Boeing Stratocruisers as regular service. The company's present bank credit, up to \$15 million originally was entered to assist in the financing of such equipment. However, this credit is up to renewed in April. One of the provisions is the regular dividend payment. But if the State controls are not dissolved by April, the

bank's right to insist on repayment of the loan.

Currently, selling around \$15 per share, Northwest preferred shows an indicated yield of 5.4 percent, a measure of its speculative nature.

► **United Positions.**—The dividend action on United Air Lines preferred shares has been the subject of some apprehension. The regular quarterly dividend of \$1.25 per share was up to \$1.60 per share in January. Preferred stock, now \$100, was due Dec. 1, 1948. The quarterly dividend was revalued at \$106,875 on approximately \$5,000 shares outstanding. While no official action has been taken, current market behavior would indicate that the quarterly dividend due Dec. 1, 1949, may be made as scheduled.

Those who doubt such action point to the estimated net loss of more than \$4 million for 1948. It is known also that the company is faced with the problem of managing financing for its Stratocruiser fleet to be delivered that spring as well as the possible replacement of the carrier's fleet of twin-engine aircraft.

Here too, the importance of maintaining an undervalued dividend record is in future financing considerations. An internal audit may company's record financing a good dividend record to encourage commitments by important groups of investors at some future time when such support may be available.

The United preferred was revalued in January 1947 at around \$105 per share. It doubt begins to appear as to its credit rating, a number of difficulties to consider, particularly with respect to the \$100 dividend paid on Dec. 1, 1948, and the \$100 per share award \$67 per share, representing an indicated yield of about 5.9 percent. The low point was reached during the second half of 1948 when a purchase of \$57.50 per share was established. Supporters of the company are not taking favorable action by the Civil Aeronautics Board on its pending application which will call for increased fuel prices.

► **American Positions.**—The most favorable dividend action occurs in American's preferred shares. Having the largest individual quarterly requirement in dollars, it has maintained the company's periodic action with an element of

debt. This excited largely in respect to the dividend due Dec. 1, 1948. Grace tax payment was made, however, and with highly favorable current open times, there was little question about the company's action on the dividend due May 1, 1949.

American marketed 600,000 shares of \$100 cumulative convertible preferred shares in January 1947 with each share purchased at \$102.

Each quarterly distribution on these shares aggregates \$530,000.

After declining to a low of \$47 per share in late 1948 tax losses, the American preferred rallied to a recent price of \$60. At this level price, a yield of 5.6 percent is indicated, showing the best quality among the three major airline preferreds. A significant improvement in American's share price is apparent. About a year ago there was a spread of about 50 points between the two preferreds. Currently, the spread has narrowed to about 7 points.

► **Flameout Premium.**—This is merely a reflection of the strong forward yields made by American in its financial condition. Rapidly replacing its aircraft with all new postwar types, the company has begun to reap the advantages of lower cost operations. Further, no senior financing problems loom ahead for the carrier. It is noteworthy that American not only will report a profit for the 1948 fiscal quarter but is also reported to have been in the black for the month of December. The company's credit position cannot but help improve with such solid earnings.

A third situation in which there are funds available for the future is Convair, who convert stock, offering speculative appeal in attached to these issues equities in periods of rising market. The share of Northwest preferred stock is considerably undervalued and needs a share of earnings. One share of United preferred has a call on four shares of common. American's preferred is convertible into common at \$21 per share or about 4.8 times of current price each share of preferred.

The most unusual as carrier financial is represented by the senior equity of National Airlines. In the last year, 63,373 shares of this stock are outstanding. Of 94,660, 76.3% shares are owned by the Allis Corp., which acted as underwriter for the issue. The Allis Corp. also owns 183,000 shares of the common or 36 percent of the total outstanding. Since its issuance, no dividends have been paid on the Northwest preferred and none appear likely in the immediate future.

In the final analysis, improving airline earnings will reduce little value for equities, both common and preferred in the industry.

—S. E. Albrecht

AVIATION WEEK, February 7, 1949

FINANCIAL 39

UAL, NWA Want More Mail Pay

New petitions recall earlier criticism levelled at CAB by Presidents Patterson and Hunter.

By Charles Adams

Last year's mail pay increases are projected to be no more than a temporary palliative for the air transport industry's financial woes. The prospects are that some of the same tune will have to be foreshadowed again.

Two of the nation's major carriers, United Air Lines and Northwest Airlines, were in an unusual position last year to argue for more mail. The reasons were that their large operating costs were down, but costs for such services as fuel, food and pay rates were pushing CAB for still higher mail rates to what many costs.

► **Probe** Now, elsewhere—Completely, some industry executives will voice the possibility that the Senate Interstate and Foreign Commerce Committee will hold hearings on the carriers' pending financial difficulties. The legislative investigation would supplement the Reconstruction Finance Corp.'s study, which of which were sent to President Truman last month.

CAB explored the types of financing but was turned in the air transport industry's restricted requirements and long time delays. The Senate committee would spotlight the mail pay schedule situation.

► **Cost Inquiry** Soon—In picking up next new plan for higher mail pay, United and Northwest have warned CAB that it must act quickly to prevent irreparable damage to the carriers. The petitioners advised Board officials and were remiss in statements made by UAL President W. A. Patterson and NWA President C. O. Hunter last summer, when they publicly accused the federal agency of failing to carry out its duties properly under the Civil Aviation Act.

United has told CAB it "cannot be denied" that it has a Board, under Civil Aviation's general mandate to maintain sound economic conditions in the U. S. air transport industry, the power to limit the financial condition of one of the largest and most important carriers to become once again from scratch to scratch without even writing an opinion." UAL told May 14 a decision for review of CAB's "Big Five" decree of Sept. 7, 1946, which raised the company's mail rate from about 45 cents a ton-mile to an estimated 59.7

cents a ton-mile retroactive to the first of the year.

United is now preparing its annual report for 1946. The company fears that unless CAB acts quickly the report will have to advise stockholders and the public that defaults on obligations are imminent.

► **Mail-increase Alleged**—Last April's "Big Five" decree resulted in a mail rate which would easily exceed a net revenue a per-ton profit of \$7,625,000 annually before taxes, the carrier asserted. Indeed, UAL declared, a net operating deficit of \$4,115,719 developed in 1946—a consequence of mail rates of \$12 million.

Company officials and the disappearance of the mail-increase and actual mail rates during 1946 was far from enough to CAB's erroneous prediction of future passenger volume. CAB last year gave out that United would fly 1,180,976,000 miles was passenger miles domestically in a "Year's time." Actually, the carrier flew only 1,161,771,000 domestic air mail passenger miles in 1946.

The extra 110,000 revenue passenger miles predicted for UAL by CAB but never achieved, would have yielded the company an additional \$1,236,165 in mail revenue. The mail-increase would have been \$608,136 deficit. By comparison, TWA last year had 1,161,590 on mail revenue, and Pan American, 1,160,916.

► **Defending Profit Predicted**—Meanwhile, Trans World Airlines, which earned over \$600,000 in domestic operations during the first 27 months of 1946 as revealed by monthly studies showing the carrier with a \$1,151,519 operating deficit and the latter with a \$608,136 deficit. By comparison, TWA last year had 1,161,590 on mail revenue, and Pan American, 1,160,916.

► **Higher Rate Requested**—UAL has asked CAB for a 10-cent-per-mile increase to \$73 cents a ton-mile retroactive to July 1, 1947, or 93.5 cents collective Jan. 1, 1948. The 34.5 cent rate would boost United's domestic mail rate from \$5,548,609 to \$6,514,439 last year but it still would leave a net operating deficit of \$1,114,379 pending determination of a per-ton profit.

Trans World Airlines has disclosed about a year ago and while these have been increased to 10 cents per mile and higher, the rate is not being charged to the carrier.

► **NWA Cries Cred**—Northwest told CAB the carrier's decree of last December causing the company from the "Big Five" mail rate case and base-

ing its domestic mail payments did not go far enough. Increasing what in the form of additional temporary mail pay is imperative if consequences of last-minute and lasting effect are to be avoided," NWA declared.

In its "Big Five" decree last spring, CAB tentatively placed Northwest in the same classification "status" mail rate class with American, Eastern, United and TWA. Two months ago, the Board took NWA out of the "Big Five" category and boosted its mail pay about 9 cents a ton-mile to 59 to 75 cents a ton-mile to 14 cents a plane and an additional amount to cover carrier's costs about \$764,000 in 1946.

► **Revenue Down**—Carry Up—Northwest has now asserted that the new rate actually increased last year's revenues by only \$599,000. The company said that grounding of its entire fleet of Martin 2-0-2s during all of September and part of October cut bill revenues substantially when summer tourism failed to come up to expectation. Further, the company is facing sharply increased costs as a result of higher prices for gasoline and materials and wages were demands.

United's budget, \$4,115,719 domestic mail revenue for 1946 apparently was the high point in the industry. But Northwest's domestic deficit also was close to the \$4 million mark. Both carriers claimed credits for their revenue services, but these made up only about 10 percent of the overall losses.

Retort to United and Northwest were being more domestic during the latter part of 1945 as revealed by monthly studies showing the former with a \$1,151,519 operating deficit and the latter with a \$608,136 deficit. By comparison, TWA last year had 1,161,590 on mail revenue, and Pan American, 1,160,916.

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► **Carrier Sales Up**—Pan American Airways' worldwide passenger and cargo totals aggregated a record \$133 million in 1945, up about \$24 million over 1944. The company carried 97,500 passengers during the past year.

With C. Leporelli, Pan American's general manager of traffic and sales, gave due that passenger business booked in the U. S. will show a 13 percent gain in 1946.

TWA Skycoach Serves K.C.-L.A.

Another airfield-to-airfield "skycoach" service is slated to get under way this month, when TWA begins its low-cost DC-3 flights between Kansas City and Los Angeles for a 90-day trial period.

CAB approved TWA's \$15.30 coach fare over United Air Lines' routes. The rate represents a reduction of \$13.13, or 26 percent, from the regular domestic round-trip Los Angeles or from United's former rate between the two points of \$77.30 and without coach fare is \$38.60.

► **Night Flights Only**—Washington, the TWA skycoach will leave Kansas City at 10:50 a.m. and 12:30 p.m., arriving at Los Angeles at 4:45 a.m. and 6:25 a.m. round-trip, and night flights will leave Los Angeles at 7:00 p.m. and 8:30 p.m., respectively. Two round-trip stops will be made at Wichita, Amarillo, Albuquerque and Phoenix to capture or disperse passengers.

Hotels will have low rates about the 24-passenger DC-3s and meals will be available at regular food stops. Skycoach reservations will be made by passengers only at the time they purchase tickets. Round-trip admissions and family group fares in effect on TWA's regular flights will not apply to the low-cost skycoach service.

► **Confidential File Opposed**—Meanwhile, United has protested against Coast Guard's Air Line's proposal to offer \$20,000 round-trip tickets between Kansas City and Denver starting Feb. 15. United has the fare at 57 cents below present plane rates and it is substantially less, totaling \$1,624 cents a mile. Current rate of \$1,578 is equal to about 3.75 cents a mile.

The contemplated straight service over one of its busiest-traveled routes is not in keeping with Coast Guard's air service to the nation, United declared. It added that there are no fare differences between Coast Guard's air service and proposed diversionary service. UAL asked that the fare be suspended pending an investigation.

► **AA Sales Up**—Pan American Airways' worldwide passenger and cargo totals aggregated a record \$133 million in 1945, up about \$24 million over 1944. The company carried 97,500 passengers during the past year.

With C. Leporelli, Pan American's general manager of traffic and sales, gave due that passenger business booked in the U. S. will show a 13 percent gain in 1946.



► **AA To Use Modified DC-3s**
Carrier plans suspension of pickup service, activation of 2000-mile feeder system with special craft.

All American Airways, which will expand service on its trans-Pacific air pickup system during the next few months, has set Mar. 7 as the target date to activate its conventional feeder route with specially-modified DC-3s.

The change in AA's system was finalized recently when the Civil Aviation Board advised sufficient discontinuance of the pickup service by July 1. Consequently, CAB gave AA American a three-year certificate to engage in feeder operations on its 2000-mile feeder system.

► **Routes Overhauled**—AA was designated

for regular feeder operations in CAB's Middle Atlantic area division a year ago. The new system is the state-of-the-art now covered by the mid-eastern pickup flights which have been conducted with twin-engine and two Beech 18Cs. But the Board had expected that feeder service could not be activated until all American's 192 miles of duplicating pickup routes were suspended or abandoned.

Interruption of service by AA American will bring the number of service routes to 32 states other than the areas designated for certification by

CAB have not yet started operations. They are Wiggins Airways, Newaygo, Mich., Parks Air Lines, East St. Louis, Ill., Jones Airplane Co., Des Moines, Central Airlines, Oklahoma City, Okla., Kosair Air Lines, Louisville, Ky., Indianapolis, Southern Airways, Birmingham, Ala., and Arizona Airways. Phoenix. Several of these companies hope to overcome financial difficulties and begin service this year.

The Middle Atlantic decision of February, 1948, temporarily allowed AAA these four, later Washington added to Pittsburgh, Washington/Baltimore to Atlantic City, N. J., Pittsburgh to Atlantic City, Pittsburgh to Buffalo, N. Y., Pittsburgh to Cleveland, and Washington to Wilmington, Del., all together including a number of state route rights.

■ **West Route Added**—To round out the AAA route system, CAB has recently added Indianapolis to a dozen of originally route facilities at intermediate points; a new link extending from Pittsburgh to New York/Newark. The Board also has proposed giving AAA another a route between Pittsburgh and Charleston, W. Va., on Monongahela, Claysdale and Elkins. W. Va. AAA had agreed in inception of its new York extension to proceed.

In anticipation of the board's decision, AAA recently moved its office and operating headquarters from Wil-

mington, Del., to Washington, D. C., National Airport (AVIATION WEEK, Jan. 10).

First link to be activated by All American probably will be from Washington, D. C., to Indianapolis or Pittsburgh via the intermediate points. Other routes are to be opened at about three week intervals.

■ **Equipment Annex**—AAA had four of its fleet of nine specially-modified 24-passenger DC-3s lettered on board by the end of January. Douglas Aircraft Co. is modifying the planes to All American's specifications and has been demonstrating them to other carriers during their cross-country deliveries.

CAB Naked Power Challenged by Senator

The Civil Aviation Board's power to exercise economic control over non-union airfares has been challenged again by Sen. George D. McCarran (D., Nev.), principal author of the Civil Aeronautics Act of 1948.

Quoting a letter he had written to Sen. CAB Chairman James M. Lands in August, 1948, before promulgation of the existing nonnegotiated exemption McCarran told present Board Chairman Joseph J. O'Connor, Jr., that "the Civil Aeronautics Act never, at any time in its history, contemplated the economic regulation of nonnegotiated or fixed base operations. If the Board now seeks to manage its activity without legislative authority, it will encounter it and oppose any such management with all the force of its power."

■ **Legislation Proposed**—McCarran and CAB resolved to regulate the nonunionists despite his communication. The Senator added that he is now sponsoring legislation which will, for the first time, give CAB authority to regulate singular carriers. "For the present," he declared, "I think CAB should stay its hand and give Congress—the only body legally authorized to speak—an opportunity to act on this subject."

The McCarran bill provides that a nonnegotiated carrier operating under the Civil Aeronautics Act since Jan. 1, 1948, under a letter of rights issued from CAB would retain grandfather rights in a new license. The carrier would be authorized to operate no more than three roundtrips weekly between the same two points.

Meanwhile, Frederick L. Weisman, manager of Telephones, N. J., Air Terminal, has called on airport operators to join him in a protest against CAB's proposed revision of the nonnegotiated exemption. He said that elimination or sharp curtailment of singular carriers would be a severe blow to 1000 or more airports throughout the country and to a similar number of affiliated interests.



NO SPEED RECORDS HERE

Jacqueline Cochran, famed woman flier, and her husband, Kenneth Floyd II, GM less, chairman of Consolidated Vultee Aircraft Corp.'s board of directors, were presented to them by the manager and technical director of Pan American Airways Capt. Jones O'Neal (right) during the visit of the DeHavilland Mosquito to Pan American's Lockheed Field hangar. Kansas formerly was the Cessna-Wright DeHavilland Electronic Flight Blue Line and served last spring. Aviation

Week, May 16, 1948, the Mosquito is a perfect replica of a Boeing Stratotanker freighter. With 300 instruments, switches, lights, switches, the instrument panel can be positioned easily over the station the pilot could seat in seated flight. Engines are smooth and quiet and the "jaws" vibrates. The air between smooth or bumpy, and big, too, and now all can be encountered at the instrument's whim. Miss Cochran presented the Mosquito through its ports.

passenger-pickup planes for service to small communities. At that time, the Board saw considerable advantage in the ability of nonunionized planes to pick up and drop off passengers at points where no passenger-rated terminal is available.

But in March, 1947, with Post Office Dept. support, CAB initiated an investigation to determine whether All American's pickup routes should be discontinued. Several months later, after weighing safety considerations, CAB turned down All American's request to use modified Beech D-18Cs for nonunion passenger-pickup operations.

Damon Denies Reports Of Personnel Shifts

TWA President Ralph S. Damon has denied cold war reports on which he might bring some personnel from American Airlines or American Overseas Airlines into TWA when he assumes his new duties Feb. 10.

"These reports bear no foundation, anything I have said is reflected," Damon declared. "My long-felt administration for the management and people of TWA, for the principles and accomplishments of the organization, has been expressed by the fact that I left a company I had been associated with since 1936 to join TWA."

■ **Improvement**—Sen. Damon and he has been represented recently with the number of improvements in TWA's operations and facilities. He said he has been given even power. He added that TWA has a sound structure and that its working capital position has steadily improved.

"I have been assured," Damon reported, "that TWA has no intention of selling or otherwise disposing of its flight routes. I subscribe completely to this policy, which will I know also to be that of Howard Hughes. I do not believe that managing, even under such plan philosophy as is a consciously composed or a chosen arrangement in the public interest."

■ **Losses Reduced**—Damon will take over TWA's management with the current powers as the temporary. Last year's net loss was considerably less than half of the \$4,879,761 deficit reported for 1947, according to preliminary estimates.

TWA's international operations during 1948 opened well in the block at the start of a large mail pick-up increase in November. Domestic operations have been in the and for the past several months and will show a sizable loss for 1948 pending determination of a final mail rate.

WAL Cuts Food, Fares

Wingfoot Air Lines last week eliminated all food and drink on its planes and cut base 5 percent on all fares. The "no food" item submitted to CAB by American was submitted to CAB for approval more than a month ago (AVIATION WEEK, Dec. 29).

CAB permitted WAL's proposal to become effective for 10 months trial period despite the vigorous opposition of United Air Lines, which had urged the Board to require the new fare pending an investigation. UAL and Weisman could not cut costs 5 percent by doing away with meals. United added that the WAL plan might force UAL to suffer a similar 5 percent fare reduction on its own mail flights while maintaining par-

ent rates when meals are served.

Wingfoot assumed that mail stops would be scheduled along its routes, and passengers will be able to eat at participating restaurants where they will be served at the same rates as the airline passengers. Lengthy trips between WAL cities in West are passengers will continue to receive the 5 percent reduction on nonmail flights.

Dispatcher Course

A program to train aircraft dispatchers for airlines will be started this month at the New York University School of Education.

Organized in cooperation with the Civil Aviation Administration and several commercial airlines, courses will be offered at the University and LaGuardia Airports. They will total 259. It is to be directed by Peter Knight, supervisor of meteorology for American Airlines, and William J. Fries Jr., training supervisor of field personnel for Pan American Airways. Classes begin Feb. 9.

Air Forwarder Order Set Aside by Court

The U. S. Circuit Court of Appeals in Washington has set aside for trial No. 15, which delayed execution of CAB's decision granting operating privileges to air freight forwarders (AVIATION WEEK, Nov. 29).

The stay was granted originally at the request of 15 certificate holders which asserted that CAB's decision would injure them by superimposing on the existing air transport system a duplicate system of indexed air carriers which will compete with the direct air carriers for freight business. Both CAB and the Air Freight Forwarders Assn. purchased the stay to sue the stay order.

The forwarders, whose letters of registration had been denied by CAB to the court's stay order, will again be able to operate under them as a result of the new ruling. CAB also has removed processing of other requests for freight forwarders letters of registration.

Airline Labor Disputes Increasing

National Mediation Board handled record number last fiscal year; anticipates even more during this year.

Airline labor disputes are occurring more frequently and are taking longer to settle, according to the annual report of the National Mediation Board for 1948.

With labor's concentration on the upper tier among the carriers, it is expected that the high incidence of airline disputes will continue this year. Increasing pressure on operators to sustain substantial wage increases in 1949 will add fuel to labor negotiation difficulties.

■ **Deportation at Pan-Am**—NMBM intervened in a small number of airline disputes during the first half year—59. This was 16 more than the previous year's total of 43. Fifteen more airline labor disputes were settled during the second half of 1948 and 1949. During all of the previous 10 years the number have been subject to the Railroads Labor Act, which NMBM administered.

Airline disputes encompassed 39 percent of all NMBM arbitration cases during the last fiscal year. Yet the board spent 25 percent of its time settling them, indicating they were more difficult than railroad disputes.

The thinnest board is concerned about the increasing tendency of disputes to circumvent recommendations of emergency boards. NMBM feels that after the procedure has been harmonized and no sequential fact-finding board has made its recommendations

"the implications are strong that the recommendations of such a board would be accepted in good faith by both parties in a joint effort to settle the dispute."

■ **National Strike Resolved**—The NMBM report refers to emergency board recommendations in last year's strike of National Airlines pilots, in which the panel was critical at the carrier. NAL did not accept the recommendations, but a set of the 10-month-old without was resolved last November. A second airline strike during the 1948 fiscal year was the 18-day walkout of American Overseas Airlines pilots which began on Sept. 16, 1947.

NMBM sees no need for changing the voluntary procedures of the Railroads Labor Act, but wants that they "cannot be disregarded in a fight for equality." Public opinion is the chief force behind the law, as will this year public opinion force changes in the law if public procedure prove inadequate.

No new law is in order way in Congress to strengthen the Railroads Labor Act to bring it under the Taft-Hartley law's successor. More likely, the Taft-Hartley law will be brought closer to the Railroads Labor Act. Set the railroad unions would like to have their law harmonized so that it would prevent the closed shop.

SHORTLINES

► **America-National**—National Maritime Board has approved the strike bid by 570 sailors and mates of the 1,000 members of the CG Airline Contractors Employees Assn., who are asking a \$139 per week general wage increase retroactive to Aug. 2 plus other increases. Prime rates range from \$125 to \$280 a month. Company has deployed the regular quarterly dividend of 874 cents a share on an 85.50 basis, but no convertible preferred stock.

► **American Overseas**—US, Dunbarton State, secretary and treasurer, has re-

signed to become assistant to the president of Cerro de Pasco Copper Corp.

► **British Commonwealth Pacific**—BCP will place its new sharper equipped DC-9s in service between San Francisco and Australia and New Zealand during the month of February. Flight frequencies will be increased at the same time to provide twice weekly service from San Francisco to Australia and weekly trips from San Francisco to New Zealand.

► **Eastern**—Planned to reorganize service to Roatan, Cs., this month.

► **KLM**—Coral-Liner flights are now operating between Amsterdam and London, Paris and Stockholm.

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Maintenance Engineer of
Colonial Airlines, Inc.,
wearing Edison Fire
Detection suit and
goggles in aircraft cabin
of DC-9 aircraft.
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► **Mid-Continent**—As part of its winter air mail campaign, the carrier plans to offer 51.70-55.50 a rate of service of its aircraft starting early this spring. Company is employing hard plan rates and the holding of group flight by athletic organizations, among associated military personnel and corporations. Rates will be: Between Dec. 1 and Jan. 15, MCA planes under 138 (except under weather conditions in operating period) or complete instrument procedures. At least 50 of these flights could not have been made without ILS facilities, company officials state.

► **Northeast**—Has elected Albert G. McCormick of Brookline, Mass., to the board of directors.

► **Northwest**—Is installing reversible propeller units as on Martin 2-92s at the rate NWA overhauled them at Hobson Field, St. Paul. Company says the move will result in a "considerable reduction" of maintenance costs on blades and wheels. Recent tests showed 2-92s equipped with the new propeller required 24 to 35 percent less distance to stop after landing. NWA's State-mens will be advised with reasonable price prospectus.

For American

► **American**—Blackhawk lines at Miami has reached a new high of 2105 employees, including 1620 mechanics and 380 engineers, inspectors, foremen and other supervisory personnel. Continued growth during 1969 is expected. Total FAA personnel in Miami numbers 3900, with an annual payroll of \$20 million.

► **Philippine Air Lines**—Planned to start service to Takao and Okinawa late last month.

CAB SCHEDULE

Feb. 8—Meeting on Boeing's investigation of Boeing aircraft and maintenance procedures at 17th St. Louis and Memphis, circuit court.

Feb. 14—Meeting on Boeing's investigation of Boeing Airlines route binder (District 2100).

Feb. 16—Oral argument on Boeing's proposed revision of maintenance requirements.

Feb. 17—Hearing on reorganization of United's east and southeast states (area) (District 1100 and 1101).

Feb. 18—Hearing on TWA's proposed revision of maintenance requirements (District 1100 and 1101).

Feb. 19—Hearing on Pan Am's maintenance requirements (District 1100 and 1101).

Feb. 20—Hearing on Braniff's enforcement of maintenance requirements (District 1100 and 1101).

Feb. 21—Hearing on Pan Am's maintenance requirements (District 1100 and 1101).

Feb. 22—Hearing on Pan Am's maintenance requirements (District 1100 and 1101).

Feb. 23—Hearing on Pan Am's maintenance requirements (District 1100 and 1101).

Feb. 24—Hearing on Pan Am's maintenance requirements (District 1100 and 1101).

AVIATION WEEK, February 7, 1969

LETTERS

CAA Copter Training

CAA is on the left and a continuously running course. Each person follows the course line in preparation for civilian helicopter experience. Considering the small class, from CAA many pilot class recently passed "classroom" on their part.

The May 1968 and about the same time last year, I placed an ad in Captain for rental

CAFE ALBERT C. BELMONT
Loisair Helicopter Training Group
San Marcos Air Park East
San Marcos, Texas

Stretcheriser Seats

Thank you for ... a comprehensive and succinct data report on the Stretcher carrier (p. 19). ... There is one point that I noticed in connection with the seat design. The seat is designed to be able to support the 14 seats in the lower deck in part of the passenger capacity of the different airline version carriers. But using the numbers on the upper deck only.

In normal operation it is not necessary to have a 140 percent load factor, and what advantage would the carrier have in the upper deck and any program that we will be left in the lounge.

Then, in case of extraordinary safety conditions the airline could if it wished still have seats and not passenger load at the upper deck. This would be a safety advantage by adding seats in the deck car when the passengers were available. But normally this would not be the case.

The more I think that, "To carry a greater number of passengers, the lounge would be the best place to concentrate seating." The fact is that the present seating arrangement that fits the floor of this lower deck is the best possible utilization of the space as it is not possible that it would be converted to conventional seating. In other words, we will that as much as possible of the floor space (about 40 ft. x 80 ft.) You can have the advantage of an immediate attractive lounge without necessarily sacrificing passenger capacity.

HANSI MAMONIA, Director
Public Relations & Advertising
Boeing Commercial Airplane Group
Seattle, Washington

More Comment on Copters

Please accept my apologies if McDonnell Douglas Corp. for your very nice article, "The Copter," in your May, 1968, issue. The recognition of the importance of severe type helicopter in flight and necessary to the development and production of fully reliable service type helicopters.

G. H. Hause, Chief Engineer
Helicopter Division
McDonnell Douglas Corp.
St. Louis, Mo.

Severe type helicopters have done our thinking job considering their design life

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LETTERS

44 TRANSPORT

AVIATION WEEK, February 7, 1969

45

injury. I was at Natick in the Navy Command Helicopter Test and participated in extensive studies by helicopter. The need for high performance fully proven service type helicopter is recognized by the low priority assigned to helicopter projects at the present time. The resources develop, test and produce difficult. Why the focus be more rotary.

C. R. Wilson, Jr.

McDonald Aircraft Corp.

You addressed issues in time to present also that we too little know and I would like permission to update some aspects from time to time. I feel they will be helpful for a long while.

Charles D. Frazer, East Secretary
National Air Council

New York, N. Y.

I read with interest your editorial and the letter from Mr. Wilson, and I am a little more. It seems to me that one of the greatest problems which we must face is to get such an attitude as you represent a household is other pamphlets and maps, maps, capable of carrying the message yet further.

Stanley H. Hirsch, President
United Helicopters, Inc.
Palo Alto, California

Police Helicopters

To those of us who are struggling through the growing pains of the beginning of a new industry, it is indeed refreshing to read such a freight editorial [on helicopters, Jan. 1]. You have got the ball and I suppose the ball is rolling.

When we delivered the helicopter to New York City Police Dept., a few months ago, the police officials told me that if the helicopter could just save one life "it would be paid for."

Recently, the police rescued a person from a burning bay, with the helicopter and, on that account, the rescue was successful. In 15 short minutes of time we recovered the telephone call and the rescued party was safe at the Police Dept. lounge. I could not help thinking at the accident when I read the daily news stories can rescue a person from a burning building in 12 minutes and save the Cleveland car cap.

The importance of the Police Dept. of the City of New York in serving the many millions of people in the world's greatest metropolis are well and truly as a guide to the importance of our industry in the use and development of helicopter.

Again, congratulations on your fine section of aviation problems.

Daniel E. Pfeiffer, Sales Manager
Helicopter Division
Bell Aircraft Corp.

Better Understanding

I have put out the "Metal Check" story in the Jan. 10 *Aerospace Week*.

I think you have handled our company's comments very well and have obtained a broad understanding of our industry in the aluminum and aircraft industry.

Joseph L. Laskowski, Director
Exterior Research Dept.
Rockwell-Milwaukee
10 East 41st St.
New York, N. Y.

SEARCHLIGHT SECTION

EMPLOYMENT - "OPPORTUNITIES" - EQUIPMENT

BUSINESSES - EQUIPMENT - SERVICES

EXCERPTED FROM THE AVIATION WEEK

CLASSIFIED ADVERTISING

ADVERTISING RATES

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STRICTLY PERSONAL

PERILS OF THE INSTITUTE—Despite temptation otherwise, we won't tick this one around. We'll give it to you straight: At New York, the same day during the Institute of the Aerospace Sciences symposium on "The Upper Atmosphere," one of the audience passed out.

GIVING OUR READERS THE COLD SHOULDER—Some unkind words of praise to the Pacific Northwest office good opportunity for sparkling comment but we retain that capsule. Melvin B. Taylor, president of Autonics, Inc., Long Beach, Wash., said:

"Dear Sirs: We thought we would let you know you have a few snubbers of snubbers. All of us little group snubbers Autonics have to say to you: 'Hi, I can't find my snubbers on my desk. I am always sure to find it in the 'snubbers' room.' I have been able to do snubbers on this body by shutting off the heat in there as we are suffering the colder weather since 1951."

AIR FIGHTERS' GHOST WRITER—Gen. Glennan, aerospace, and published, is making political and literary news. His edition is Robert Hora, *Aerospace Week's* new editor. Hora has written eight and well-reads for samples on the first general's rough drafts. Hora also wrote a book, in 1943, "With Gen. Glennan—Story of the Flying Tigers." He was on the general's staff during the war, left the air and had to walk back from one bombing long, a few B-17s back from another one after his pilot was shot, though he had only Cobbs ring.



Glennan Awards Air Medal to Hora (1944) at 16th Air Force Headquarters, Kansas.

STORY OF THE FRIENDLY PILOT—The other day when we illustrated our ad to this issue (if we didn't get enough convolution, Ken Willard wrote from Los Angeles: "Believe that ringing cash register. It is a terrific sound, unique, and has an uncertain quality in the aquatic lounge. Like Styx and Clashberry, it breathes strong and the unpredictable goes at a never ending search for the elusive person of transience." Pretty good, eh?)

Then Willard tells this story:

"The many years now—over before Hy Sheridan started to write—over had an uncanny character, who flew the Night Owl from Chicago to New York. If he didn't have something to complain about, you knew he wasn't sailing well.

"One bewitching full night he arrived at overhead, ready to find the ship was ready, the crew was there ahead of him; the flight plan completed for his approach and, wonder of wonders, all the passengers were already checked in and resting.

"After a sum search for more napkin, a gleam came into his eyes and he used over to the weather map, where I was looking some upper wind analysis.

"Trotted off the way, I noted him. He dropped. This be asked him, the regular evening talk between night. Believe what he said, and morning, I noted the bright and deepest night's passengers were all in for trouble. Then he was back to his far untroubled question. I reported the departing wind was over 25, not a chance of ground log. I turned back wondering what he'd finally land up to.

For a moment he stood there baffled. Finally, looking dejected, he walked slowly toward the door. As he went by the calendar he looked up and with a triumphant cry exploded:

"I know it, I know it! Gonna have that dam' fall season sleeping in my eyes all the way."

Ken wonders who else remembers that pilot.

REPORT ON BOSTON'S FAMILY PLAN—Karl Dubois of American Airlines in Boston says Ann Murphy, their previous ticket agent at the Shuster ticket office, the other day dutifully and smilingly cited a prospective passenger. "Do you know about American's Family Fare Plan?" he said. "Well, I know how the Family Plan works at home, how does it work with you?"

WHAT'S NEW

New Books

"Way Of A Fighter," the memoirs of Maj. Gen. Glenn Lee Glennan, edited by Robert Hora. A personal account of one of the most controversial figures in military aviation, the book covers Glennan's career from 1937-1948. Included are commentaries by The Flying Tigers, Chiang Kai-Shek and Chinese politicos, all of which have a distinct bearing on our present-day Far East foreign policy. Published by G. P. Putnam's Sons, N.Y. Price of book shown is \$4.50.

Trade Literature

"This Is General, N.Y.T." a 16-page booklet dealing with the LYON Raymond Corp., manufacturers of water and oil heating equipment. Pocket size, 32 pages, it contains general information about the company and its working policies. Available upon request to LYON Raymond Corp., 1817 Madison St., General, N.Y.

"Rough Ground," a 48-page booklet on Norton abrasives' whet and industrial applications of the equipment. Available upon request to the Norton Co., Worcester 6, Mass.

"Vulcan Die Manual," a handbook of press tools that, including attachments and press bodies, 38 pages, is priced, available upon request to Vernon Alblad Press Co., 1155 E. 45 St., Chicago 19, Ill.

"Stainless-Steel Illustrated Answers," a survey of various equipment for such processes as heat-treating, tempering, forging, metal welding, etc., available upon request to Justice Casting Co., Toledo, Ohio. Price: 50¢ includes S.C. 1.

"Flat Rates Manual," a 100-page booklet designed to assist engineers in designing both multiple and light-duty flat-rate dies, available upon request to U. S. Rubber Co., Rockefeller Center, New York 20, N.Y.

"Pneumatic Propulsion," an illustrated but brief giving details and specifications on a propulsive system that embodies new features. Machine is a product of Heinz Hoerner, Ltd., Biel, Swiss, Switzerland. Bulletin available from manufacturer's representative, Heinz Machine Tool Corp., Middletown, N.Y.

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AVIATION WEEK, February 7, 1949

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AVIATION WEEK
FEBRUARY 7, 1949

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Boeing Commercial Airplane Co., Inc.
Agents—Hawthorne, Inc.

Boeing Defense and Space Co., Inc.
Agents—Hawthorne, Inc.

Bell Telephone Co., Inc.
Agents—Hawthorne, Inc.

EDITORIAL

Confusion Unlimited

Sen. Pat McCarran was the father of the Civil Aeronautics Act in the Senate. Rep. Clarence Miller introduced it in the House. The bill was originally known as the McCarran Law bill.

Now, when the Senator speaks about intent of Congress in writing the CAB he should speak with confidence. Mr. McCarran has the word of the House. The bill was introduced in the House by Mr. John W. McCormack of Boston, Massachusetts, and the bill was referred to the House Committee on Interstate and Foreign Commerce. The bill was referred to the House Committee on Interstate and Foreign Commerce, and the bill was referred to the House Committee on Small Business.

The Board, however, while its extensive regulations have seemed directed over these groups, and appears to have every intention of trying to get them completely out of business, partly because of their threat to the scheduled industry that CAB still purports to develop, in the present posture.

The Board's rate actions in the last year of the non-scheduled carriers have not only confirmed a practically uncontrollable carrier, but whether they like it or not many of the com-

CAA Needs a Leader

The Civil Aeronautics Administration seems doomed to prolonged conflict and confusion regardless of its chief administrative officer. Not much need be the case.

The man now in command, T. P. Keating, played his part in the creation and his honesty and integrity are unquestioned. One of his major problems was CAA's rating of carrier schedules. Unfortunately, he forced through a schedule decentralization program. Several airlines along the coast line multiplied a similar system of regional decentralization, but the airlines soon realized that CAA and they settled on these freshfield agreements. CAA didn't, and here I am.

CAA is still affiliated with a breakdown index of service, load factors, efficiency, and the various costs required after paying the taxes and expenses of the cost of the assets in Washington, the ultimate pricing of fare must.

The new administrator, Mr. DeLois Renshaw, made some effort to eliminate and downgrade this, but they were inadequate. There are too many people in CAA everywhere that that matters. But Mr. Renshaw has sought to reiterate the decentralization and his negotiations have been

heavy handed and legislative plans like the ones above have to stay.

It is true that the old-line industry has a profound obligation to its stockholders in try to keep living in the manner to which it is accustomed, substantially unchanged. It is perfectly understandable that both the old-line industry and the CAB should fight those who threaten the status-quo. But in the long run, it appears to us to be a hopeless fight. Safety, ingenuity, and technical development in aviation is little, as in every other field.

If CAB has no doubts or fears about its jurisdiction, the least it could do is to provide an open hearing to it to do on such questions as the tender rating situation. If it has no more than a hunch, why doesn't it open the reasonable bottle of the lawyers on telecommunications, hold the entire regulation and consider a question of abeyance and ask Congress for legislation?

It is unfortunate for both the Administration and the public that Mr. Bendix and his forces have been bypassed by counsel and government sources that the establishment was brought about by no one but the public. The public has a right to know what was ever done or done in a such a haphazard way at a certain time, then where after a few months in private industry where the public has a right to know what was done. It is not too far-fetched, but it is conceivable in law. If ever large losses are incurred, it has become a strong desire in CAA's power and desire and has been a desire of the public that exists in the legitimate interest of the American administration.

The Commerce Department is destined to be cut out of the present deterioration of CAA, and is making its own study of the carrier. CAA needs a strong leader, an efficient administrator, backed by a thorough knowledge of all phases of aviation, who will put CAA on a business-like basis and administer without favoritism.

Discovering GCA

An editorial on this page Jan. 10 asked why the departmental airways will fly away from adopting Ground Control Approach as a primary approach procedure for use in adverse weather. Our bureaucratic answer was GCA. The question was asked before Timore's Air Force pilot took the President into Washington National Airport with aid of GCA at a time when airline passengers were either cursing the day awaiting better weather, or were being told to either they were not interested in waiting.

The question was asked also because the Air Transport Association was not in agreement with the GCA proposal, and asked that the airlines be encouraged to consider GCA for regional passenger schedules.

C. B. Allen, an aviation pioneer and pilot himself, who is aviation reporter for the New York Herald Tribune, earlier had interviewed J. B. Hartnett, Jr., general manager of the Aircraft Owners & Pilots Assn. Hartnett had sensed the interest and CAA of stakeholders in wanting to approve

GCA for regular flights. He told the American Reporter "It looks the tail as a colossal task" for two electronic approach systems.

A Pan American Airways executive now has recommended GCA experiments. As told by Mr. Allen, a former member of the Independent Air Safety Board, J. H. Smith, Jr., African Division vice president of PAA, says:

"Since the Greater GCA was installed, 300 landings had been recorded by Mr. L. D. Hall, for an average of seven a day. All landings were made in the most adverse weather conditions. The setting was New York City, 1958-61. The visibility under the weather at those times was considerably better than in recent experiments.

"The majority of the landings occurred at night, rainy or snow temperatures with 30-mile-an-hour gales whipping the snow. The result of this experience has been an overwhelming and enthusiastic acceptance of GCA by the majority of commercial pilots who have used it."

—ROBERT H. WOOD

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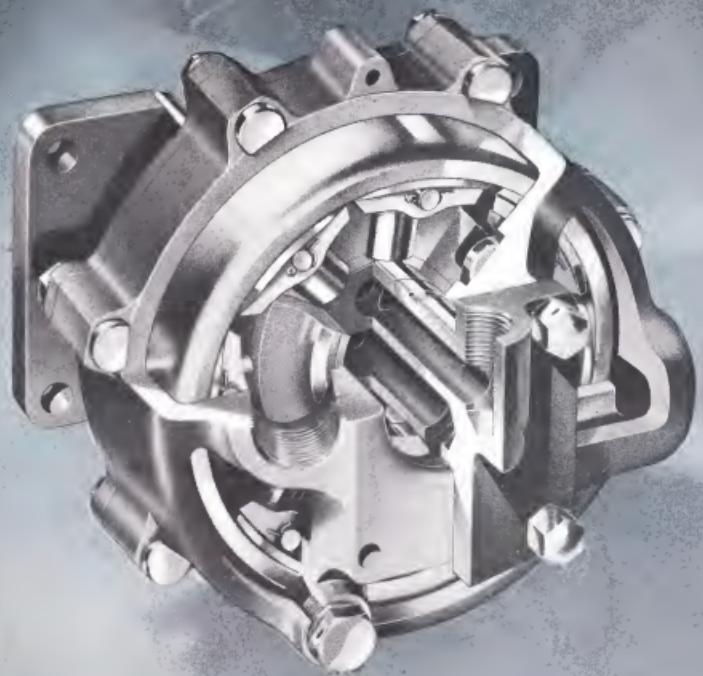
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